V12059

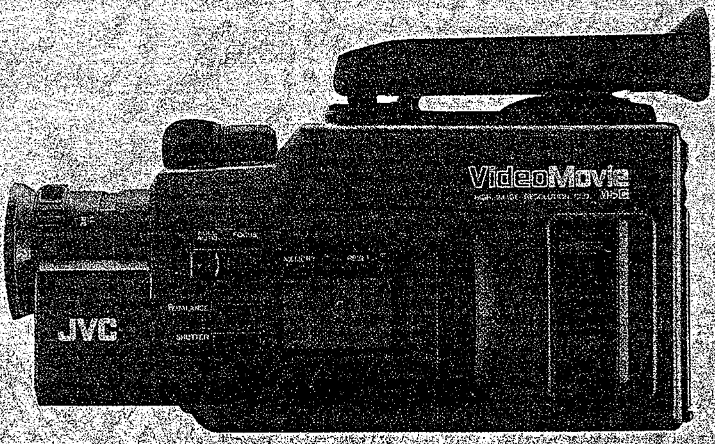
JVC

SERVICE MANUAL

VHS VIDEO MOVIE

GR-40U

HQ
High Quality



SPECIFICATIONS

Format	: VHS NTSC standard
Power source	: DC 9.6 V
Power consumption	: 7.5 W (avg.) 1.1 A (max.)
Signal system	: NTSC-type
Recording system	: Luminance: FM recording Color: Converted sub-carrier direct recording Conforms to VHS standard
Cassette	: VHS C cassette
Tape speed (SP)	: 33.35 mm/sec (1-5/16 ips)
(EP)	: 11.12 mm/sec (7/16 ips)
Recording time Max. (SP)	: 20 minutes (with TC-20 cassette)
(EP)	: 60 minutes (with TC-20 cassette)
VIDEO	
Output	: 1 Vp-p, 75 ohms, unbalanced (via AV connector)
S/N ratio	: More than 40 dB (with Rohde & Schwarz noise meter)
AUDIO	
Output	: –6 dBs, 1 k-ohm (via AV connector)
Microphone input	: –68 dBs, high impedance, unbalanced
Pickup	: 1/2"-format CCD
Minimum required illumination	: 8 lux (0.8 fc) (at F/1.4)
Illumination range	: 8 – 100,000 lux (0.8 – 9300 fc)
Lens	: F/1.4~2.0, f = 9 – 54 mm, 6:1 two-speed power zoom lens with auto iris control and macro position, filter diameter 49 mm
Viewfinder	: Electronic viewfinder with 0.6" black/white CRT
Selectable highspeed shutter	: Switchable (1/250, 1/500, 1/1000 sec.)
Color temperature switching	: Switchable (3,200 K/4,500 K/5,500 K)
White balance adjustment	: Full-auto/preset standard
Operating temperature	: 0° C to +40° C (32° F to 104° F)
Operating humidity	: 35% to 80%
Storage temperature	: –20° C to +50° C (–4° F to 122° F)
Weight	: 1.1 kg (2.5 lbs) (with viewfinder)
Dimensions	: 111(W) x 150(H) x 246(D) mm (4-3/8" x 5-15/16" x 9-11/16") (incl. viewfinder)

AA-V5U SPECIFICATIONS

Power requirement	: USA and Candada: AC 120V∿, 60 Hz Other countries: AC110–240V∿, 50/60 Hz
Power consumption	: 21 watts
Output	: DC 14V ⎓ 1.1A (Charge) DC 9.6V ⎓ 1.2A (VideoMovie)
Charging system	: Constant current, peak detection, timer controlled
Dimensions	: 68(W) x 38(H) x 150(D) mm (2-3/4" x 1-1/2" x 5-15/16")
Weight	: Approx. 380 g (13.4 oz)

C-P5U SPECIFICATIONS

Type	: VHS cassette adapter
Dimensions	: 188(W) x 25(H) x 104(D) mm (7-7/16" x 1" x 4-1/8")
Weight	: 235 g (8.2 oz)
Accessory	: "AA" -size battery x 1

RF-V3U SPECIFICATIONS

VHF output channel	: Channel 3 or 4 (switchable)
Initial channel setting	: Channel 3
Power source	: DC 8V ⎓ 20 mA (from VideoMovie)
Dimensions	: 52(W) x 80(H) x 24(D) mm excl. cable (2-1/16" x 3-3/16" x 1")
Cable length	: 2.5 m (8 ft)
Weight	: Approx. 160 g (5.6 oz)

Provided accessories:

AC power adapter/battery charger	AA-V5U
Cassette adapter	C-P5U
Battery pack	BN-V6GU
RF unit	RF-V3U

Shoulder strap
Electric viewfinder
Lens cap
Lens hood
Battery for clock operation
Title Holder

For optional accessories, refer to pages 37 and 38.

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

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No. 86046
November 1988

NOTE: For a technical description, please refer to Technical Guide VTG86007 GR-40 NTSC.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
Replace only with specified part numbers.
Note: **Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.
Caution for continued protection against fire hazard.
Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

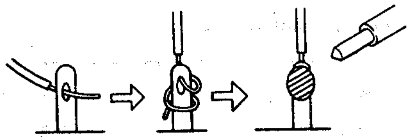


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

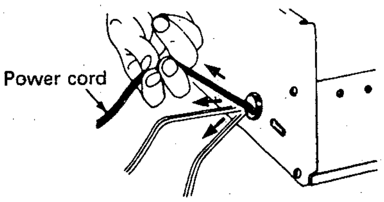


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
   1) **Connector part number :** E03830-001
   2) **Required tool :** Connector crimping tool of the proper type which will not damage insulated parts.
   3) **Replacement procedure**
      (1) Remove the old connector by cutting the wires at a point close to the connector.
      Important : Do not reuse a connector (discard it).

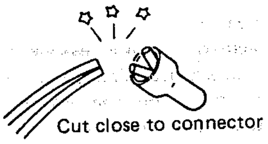


Fig. 3

      (2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

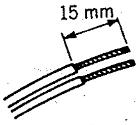


Fig. 4

      (3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

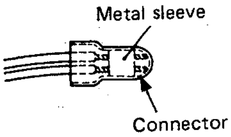


Fig. 5

      (4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

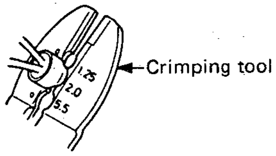


Fig. 6

      (5) Check the four points noted in Fig. 7.

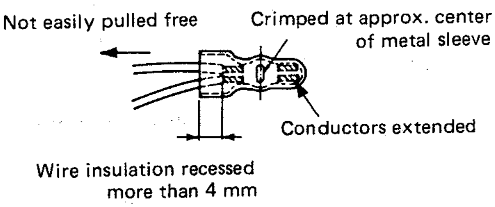

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

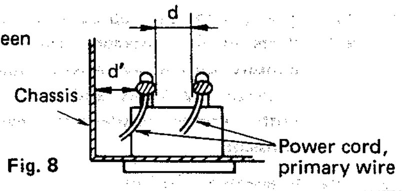


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

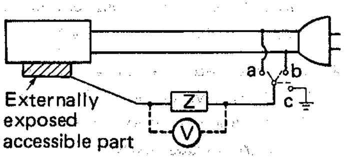


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

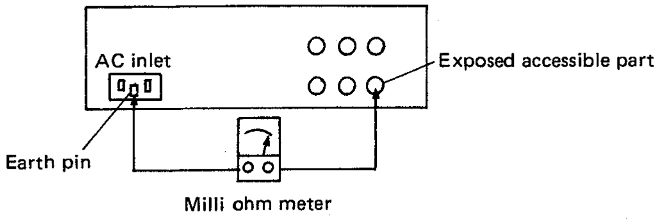


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	—	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

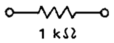
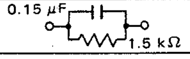
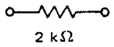
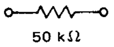
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	 1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	 0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	 2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		 50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS

MANUEL D'INSTRUCTIONS

VideoMovie

VHS C

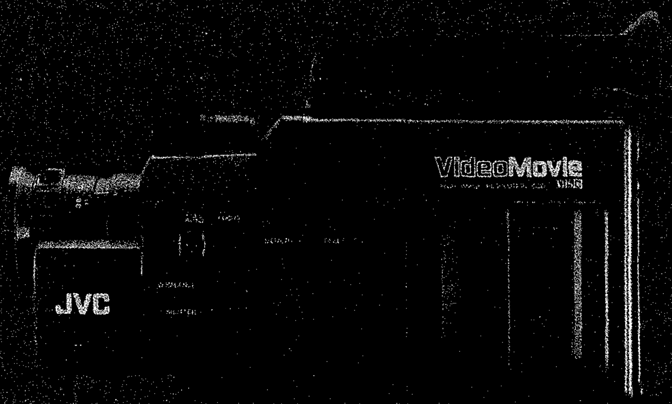
HQ High Quality

CAMERA-RECORDER/PLAYER

GR-40

Specifically for the GR-40U/AA-V5U

Spécial pour le GR-40U/AA-V5U



CCD
Charge Coupled Device

AF
AUTO FOCUS

JVC

For Customer Use:
Enter below the Serial Nos. of the GR-40U VideoMovie and the AA-V5U Battery Charger. The former is located on the bottom of the GR-40U and the latter, on the bottom of the AA-V5U.

Model No. GR-40U AA-V5U

Serial No.

YU30052-46

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

The AA-V5U AC Power Adapter/Charger should be used with:
AC 120 V∿, 60 Hz in the USA and Canada,
AC 110–240 V∿, 50/60 Hz in other countries.
Caution:
To prevent electric shocks and fire hazards do NOT use any other power source.

CAUTION (applies to the AA-V5U)
TO PREVENT ELECTRIC SHOCK DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

VHS C HQ High Quality

- VideoMovie is designed exclusively for the VHS C video cassette. Only cassettes marked VHS C can be used with this unit.
- HQ VHS is compatible with existing VHS equipment.

Thank you for purchasing the JVC **GR-40U** Auto-focus VideoMovie. Weighing only 2.5 lbs, the Auto-focus VideoMovie comprises an auto-focus CCD video camera, and recording and playback functions in a single compact unit for the most convenient live recording capability available today. The Auto-focus VideoMovie uses the VHS recording system and compact video cassettes to make recordings compatible with all VHS recorders. It can also be connected to your television set for direct playback of cassettes; no additional video equipment is required.
To take best advantage and gain the most service from your Auto-focus VideoMovie, read this instruction booklet carefully and thoroughly.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

This equipment should be used with DC 9.6 V ⎓ only.
CAUTION:
To prevent electric shocks and fire hazards, do NOT use any other power source.

NOTES:
- The rating plate (serial number plate) and safety caution of the main unit are on its bottom.
- The rating plate (serial number plate) of the viewfinder is on its bottom.
- The rating plate (serial number plate) of the AC power adapter/charger is on its bottom.

The provided viewfinder is the VF-V40U. Do not use any other viewfinder with the GR-40U.

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INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna;
Relocate this equipment with respect to the receiver;
Move this equipment away from the receiver;
Plug this equipment into a different outlet so that this equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the US Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

Warning on lithium battery

The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat above 100°C (212°F) or incinerate.

Replace battery with Matsushita Electric CR 2025, use of another battery may present a risk of fire or explosion.

- Dispose of used battery promptly.
- Keep away from children.
- Do not disassemble and do not dispose of in fire.

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FEATURES

- Allows direct playback with no additional components necessary.
- Ultra-compact and ultra-lightweight: a mere 2.5 lbs. (1.1 kg).
- 4-Page Digital Superimpose function for mixing titles or illustrations into a live recording.
- Multiple-speed electronic shutter for sharp clear playback of fast action shots (1/1000, 1/500, 1/250, 1/60 (standard) second).
- Newly developed high-resolution 1/2" field-storage type CCD (Charge Coupled Device) pickup delivering more than 400-line resolution pictures in camera section.
- One-button full-auto operation of focus, exposure, and white balance.
- Powerful, two-speed 6:1 power.
- HQ (High Quality) System for superlative picture quality.
- Maximum of 60 minutes recording time on a single tape in EP mode.
- High-sensitivity/low-lag design: allows shooting in light as low as 8 lux.
- Image Sensing auto-focus.
- Automatic Color Tracking white balance with three preset positions.
- Backlight compensation button.
- Audio/video fader linked to start/stop trigger.
- Large, easy-to-read LCD (Liquid Crystal Display).
- Ultra-compact adjustable electronic viewfinder (monochrome CRT, 0.6-inch screen) with diopter control, also for instant on-the-spot playback.
- Selectable automatic date recording function.
- Recordable date/time display.
- Elapsed recording time counter.
- Second recording start/stop button provided on top of GR-40U.
- Zero Frame Editing for glitch-free, smooth scene transitions.
- Dubbing mode switch provided for best results when dubbing.
- Selectable quick review function.
- One-button recording standby mechanism.
- Master Edit Control system: allows control of both GR-40U and connected designated JVC VCR using GR-40U's controls, and preroll editing for edits free of transition-point gaps and noise.
- Shuttle Search in both directions.
- Unique grip battery doubles as palm grip, saving weight and space.
- Ergonomic design with palm grip and finger rest for trigger control.
- Trigger alarm system for preventing recording errors.
- Three-way power supply flexibility: battery pack, AC power adapter, and car battery.

The GR-40U is designed to be used with NTSC-type color television signals. It cannot be used for playback with a television of a different standard. However, live recording and viewfinder playback are possible anywhere. Use the BN-V5GU/BN-V6GU/BN-V7GU battery packs and, to recharge them, the provided multivoltage AC power adapter/battery charger. (An appropriate conversion adapter may be necessary to accommodate different designs of AC outlets in different countries.)

PRECAUTIONS

For safety, strictly observe the following instructions.
- Do not disassemble or modify the unit.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not use the unit when there is lightning in the vicinity. Disconnect the power cable of connected equipment.

Avoid using the unit under the following conditions:
- Places subject to excessive humidity or dust.
- Near appliances generating strong magnetic or electric fields (speakers, broadcasting antennas, etc.).
- Places subject to soot or steam such as near a cooking stove.
- Places subject to excessive shock or vibration.
- Near a television set (rolling pictures or howling might result).
- Extremely hot places.

Do not expose the unit to high temperatures over 40°C (104°F) for long periods.
If the unit should be subjected to direct sunlight, or left in a closed car in summer, or placed near a heater, the CCD and the auto-focus sensor may deteriorate and the cabinet may become deformed. Furthermore, this also may cause the transistors and other electronic and mechanical parts to malfunction. Remember the following:
- Do not leave the unit in places of over 50°C (122°F).
- Do not use the unit in places of over 40°C (104°F).
- Do not use the unit in places of below 0°C (32°F).
- Protect the unit from excessively dry or excessively humid conditions (below 35 % or above 80 % humidity).
- For long storage, select a place between -20°C (-4°F) and 30°C (86°F).

Take special care for protection of the unit.
- Do not allow the unit to become wet.
- Do not leave the unit in closed cars on hot summer days.
- Take special care not to drop the unit or strike it against hard objects. Protect from shocks during transportation.

Make it a rule to observe the following instructions.
- Do not remove the battery pack or disconnect other power supply units during recording or playback before pressing the POWER switch to OFF. If not observed, this will cause tape damage.
- When the unit is not in use, remove the battery pack.

Keep the lens and viewfinder eyepiece always clean.
- When the lens is dirty or dusty, blow it off first and then gently wipe with a soft brush or lens cleaning paper.
- The lens is likely to become moldy if left dirty.

Be careful not to damage the CCD.
- Do not keep the lens directed at extremely bright objects such as the sun or other light sources for long periods. Although the CCD is less susceptible to such burn than a tube would be, caution should be exercised when using this unit. Most importantly, the lens should be capped except while actually shooting.
- Do not direct the eyepiece of the viewfinder at the sun.

Auto-focus requires a bit of consideration.
- Do not touch the focus ring while the auto-focus mechanism is in operation as this could damage the auto-focus mechanism.
- When a filter or a special-effect lens is to be attached to the end of the lens, be sure to turn power off or switch from the Auto-focus mode to the Manual mode. NEVER attempt to attach a filter or lens while the auto-focus mechanism is operating as this will result in malfunctioning. (If a teleconversion or wide-angle conversion lens is attached, the auto-focus mode cannot be used.)

Handle the unit carefully.
- Protect the microphone from excessive shocks.
- Do not carry the unit by holding it only by the viewfinder.

Moisture condensation prevents use of the unit.
- You have observed that pouring a cold liquid into a glass will cause drops of water to form on the glass's outer surface. This same phenomenon occurs on the head drum of a video recorder when the recorder is moved from a cool place to a warm place, after heating in a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.
- Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the recorder itself.
- If moisture condensation occurs on the head drum, a condensation warning appears in the counter display and the unit enters the Stop mode, unable to function. In such a case, wait for a few hours until the indicator disappears.

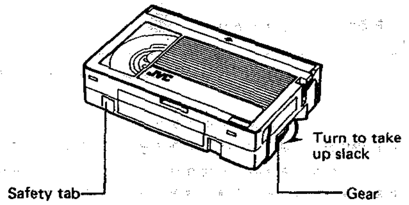
Maintenance
- When the cabinet is dusty, clean by gently wiping with a soft cloth.
- Avoid the use of strong cleaning agents such as benzene or alcohol as they may damage the cabinet.
- Cleaning should be done only after the battery pack has been removed or other power units have been disconnected.

Serious malfunctioning

If malfunctioning occurs, stop using the unit immediately and consult your local JVC Service Center.

VIDEO CASSETTES

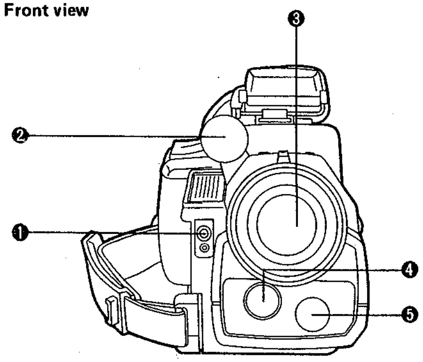
- The GR-40U employs only the cassettes carrying the VHS C marks.
- Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.
- An inverted cassette cannot be inserted.
- Do not load and unload the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.
- Make certain before loading the cassette that the tape is not slackened. If there is any slack, turn the gear on the cassette in the direction of the arrow to take up slack.
- The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.
- To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.



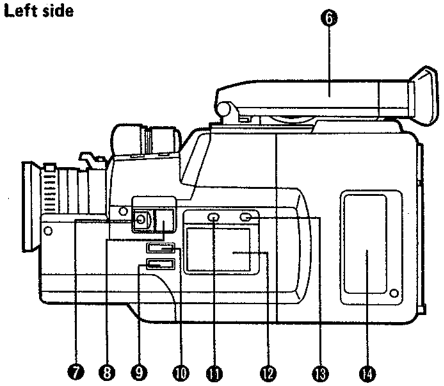
Storage of cassettes
- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid storing the cassettes in humid or dusty places.
- Do not drop the cassettes. Do not expose them to violent vibrations or shocks.
- Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- Place the cassettes in cassette cases and position them vertically.

CONTROLS AND CONNECTORS

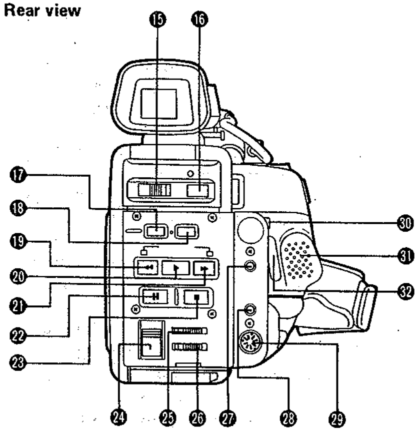
Front view



Left side



Rear view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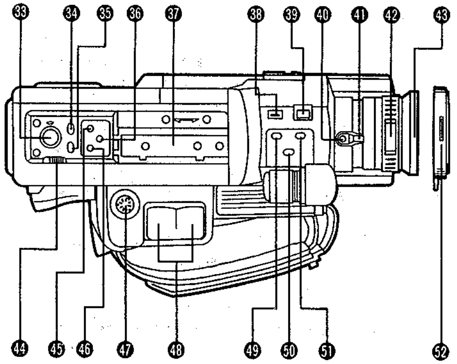
Top view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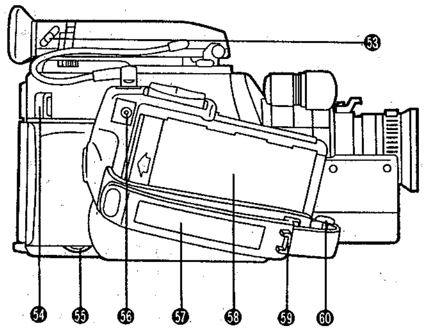
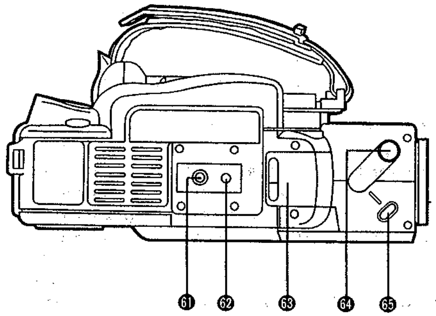
Right side


(53)
(54) (55) (56) (57) (58) (59) (60)

Bottom view


(61) (62) (63) (64) (65)

① External microphone jack (MIC)

② Exclusive microphone

Omnidirectional condenser microphone for simultaneous sound recording.

③ 6:1 zoom lens

F/1.4, f=9–54 mm. Filter diameter: 49 mm.

④ Auto-focus sensor window

Allows light to enter for measuring the camera-to subject distance.

⑤ White balance sensor window

Allows light to enter for white balance adjustment.

⑥ Electronic viewfinder

For monitoring scene being shot or the playback picture after recording. Several indicators are included, as well as the date/time or elapsed recording time if selected.

⑦ FULL AUTO button

Pressing this button puts the focus and white balance under automatic control and selects the standard shutter speed. Auto-focus can be cancelled by pressing the FOCUS button; auto white balance can be cancelled by pressing the W.BALANCE button; the high-speed shutter can be selected by pressing the SHUTTER button. Pressing the FULL AUTO button in the full-auto mode has no effect.

⑧ FOCUS select button

Switch to AUTO for automatic focus, and switch to MANUAL to focus manually. Check on the LCD. The focus mode is reversed each time this button is pressed. The auto-focus mode can also be selected (together with the auto-white mode) by pressing the FULL AUTO button.

⑨ SHUTTER select button

Pressing this button switches the shutter between 1/1000 ("1000"), 1/500 ("500"), 1/250 ("250") -second high speed shutter and 1/60-second ("STD") speeds, as displayed on the LCD. The standard shutter speed can also be selected by pressing the FULL AUTO button.

⑩ W.BALANCE select button

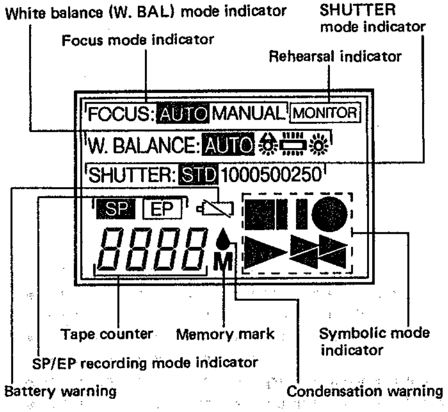
The white balance is manually selectable using this button. Press once to display the current white balance mode in the LCD. Continue pressing to cycle through the available modes.

💡: Halogen or tungsten lighting.
▭: Fluorescent lighting.
☀: Daylight.
AUTO: Automatic white balance adjustment.

⑪ Counter MEMORY button

Press this button at a point on the tape you want to locate later after resetting the counter to "0", and the tape will stop automatically at the counter reading of around "0" during rewind or fast forward.

⑫ LCD (liquid crystal display)


White balance (W. BAL) mode indicator
SHUTTER mode indicator
Focus mode indicator
Rehearsal indicator
FOCUS: AUTO MANUAL MONITOR
W. BALANCE: AUTO
SHUTTER: STD 1000 500 250
SP EP
8888
M
Tape counter
Memory mark
Symbolic mode indicator
SP/EP recording mode indicator
Battery warning
Condensation warning

Tape counter:	Shows from "0" to "9999".
Battery warning:	Blinks when the battery power becomes insufficient for normal operation.
Condensation warning:	Appears when excessive condensation occurs inside the unit.
Memory mark:	Appears when the MEMORY button is pressed.

Symbolic mode indicator

STOP:	■	REWIND:	◀◀
PLAY:	▶	FAST FORWARD	▶▶
PAUSE:	❚❚	REVERSE SHUTTLE SEARCH:	▶◀◀
RECORD:	●	FORWARD SHUTTLE SEARCH:	▶▶▶
RECORD PAUSE:	❚❚●		

⑬ Counter RESET button

Press to reset the counter to "0".

⑭ Cassette holder

Insert a VHS C video cassette for recording or playback.

⑮ POWER switch

Slide to turn the power on. The Stop indication appears on the LCD. Slide again to switch off power.

⑯ REC standby button
Press to engage the Recording standby mode. To start recording, press the recording start/stop button ㉜, ㉝.

⑰ MONITOR button
Push this button when you wish to rehearse shots before actually recording them. This function allows you to view the scene on the viewfinder without recording it. Push the STOP button to release it.

⑱ QUICK REVIEW/EDIT button
If you want to review the end of the recorded segment for confirmation, press this button from the Record-Pause mode; the tape will be rewound for about two seconds of program time and played back automatically for this section, after which it will stop in the Record-Pause mode in standby for the next shot. When dubbing from the GR-40U to a designated JVC VCR, it also functions to begin VideoMovie playback in synchronization with video deck recording (see "Using the Master Edit Control system", page 31).

⑲ REW/SHUTTLE SEARCH button
Pressing this button in the Stop mode rewinds the tape; pressing it in the Play mode allows fast playback in reverse (three times normal speed in SP mode, seven times normal speed in EP mode.)

⑳ PLAY button
Press to start playback. When this button is pressed when the unit is in the REC PAUSE mode, the unit will enter the REC mode.

㉑ FF/SHUTTLE SEARCH button
Pressing this button in the Stop mode fast-forwards the tape; pressing it in the Play mode allows fast playback (three times normal speed in SP mode, seven times normal speed in EP mode).

㉒ PAUSE/STILL button
Press to view a still picture during playback or pause playback. When this button is pressed in the REC mode, the unit will enter the REC PAUSE mode.

㉓ STOP button
Press to engage the Stop mode.

㉔ EJECT switch
To open the cassette holder.

㉕ SP/EP recording mode select switch
Set to SP to record at standard tape speed. Set to EP to record at a slower tape speed, allowing an extended recording time of up to one hour with a single cassette.

㉖ DUBBING ON/OFF switch
Normally, set to OFF. For best picture quality when dubbing, set it to the ON position.

㉗ REMOTE control jack
For connection of the optional RM-P1U pause remote control unit and RM-V10U remote control unit.

㉘ Earphone jack (PHONE)

㉙ AV OUT connector
Both audio and video signals may be delivered from this connector. For playback with a TV set not equipped with A/V terminals, connect the RF-V3U RF unit (provided) to this connector and to the TV. To dub from this unit, connect the A/V input connectors of a second recorder to this connector, using the optional VC-V826U A/V cable. To play back from this unit to a TV set, make a connection between this connector and the TV's A/V input terminals using the A/V cable.

㉚ ALARM ON/OFF switch
Switch to on to engage the trigger alarm system. Switch to off when you do not wish to use this system.

㉛ Finger rest
Place your thumb on this grooved area next to the start/stop switch between switch operations.

㉜ Recording start/stop button (Trigger button)
Press this button in the Recording Standby mode to start recording. Pressing it again re-engages the Recording Standby mode.

㉝ Second recording start/stop (SUB TRIGGER) button
Functions exactly as the other recording start/stop button, for use when recording with the GR-40U held low.

㉞ DATE/TIME ON/OFF button
Press this button when you do not wish to record the date/time. This will remove date/time indications from the viewfinder. Press again to record date/time. Date/time will reappear in the viewfinder.

㉟ REC TIME RESET button
Press this button to reset the elapsed recording time to zero. Ejecting the cassette also does this.

㊱ DATE/TIME MODE button
Press this button to select the date/time display and recording mode. It cycles through the modes in the following order:

→ **Auto date record reserve** → **Date display** → **Date/time display** → **Time display** ┘

The auto-date-record function automatically displays and records the date for 5 seconds upon turning on the power and beginning recording. Before recording begins, this mode is indicated in the viewfinder by auto date record reserve indication "–.–.–".

㊲ Viewfinder mount
Attach the provided viewfinder.

㊳ PAGE button
Press this button to select which page of memory you wish to store your title in. This button only functions when the title is displayed in the viewfinder.

㊴ Title ON/OFF button
Press to mix memorized title or illustration with action being recorded. Press again to end mixing process.

㊵ Macro button
Turn the zoom ring while pressing this button for macro shooting.

㊶ Manual zoom lever
Use to turn the zoom ring manually.

㊷ Manual focus ring
Use to turn the focus ring manually.

㊸ Lens hood

㊹ REC TIME ON/OFF switch
When this switch is set to ON, the viewfinder displays the elapsed recording time. Switch to OFF to cancel the display.

㊺ DATE/TIME SELECT button
Use to select the portion of the clock or date settings to be changed. Cycles through the year, month, day, hour, and minute settings. To end adjustment, press once after selecting the minute portion.

㊻ DATE/TIME SET button
Use to set the built-in clock and date function.

㊼ Viewfinder cable connector
Connect the viewfinder cable.

㊽ Power zoom buttons
For automatic zooming at slow speed, press lightly. For regular speed zooming, press firmly. "T" is for telephoto zooming and "W" is for wide-angle zooming.

㊾ IMAGE REVERSE button
Press this button to activate the title reverse effect. The function will switch from positive to negative mode with successive pressing of this button.

㊿ Title MEMORY button
Up to four "pages" of memorized titles can be stored. The digital memory is maintained by the lithium battery which powers the unit's clock. Each time the title MEMORY button is pressed, a previously stored title will be erased, and a new one will be stored in its place in the designated page of memory.

(51) COLOR button
Press this button to select the color for a title or illustration. The color choices cycle as follows: black, white, yellow, cyan blue, green, magenta, red, blue. Press this button repeatedly until the desired color appears.

(52) Lens cap
Cap the lens when not in use.

(53) Dioptric adjustment control
Adjusts the viewfinder lens to suit the operator's eyesight.

(54) Slots for shoulder strap

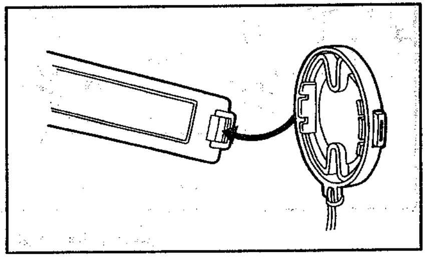
(55) TRACKING control
Minimizes noise bars, if observed, during playback.

(56) DC IN terminal
For connection of the provided AA-V5U AC power adapter/battery charger, optional BH-V5U car battery charger or AP-P1U car battery cord for DC power supply.

(57) Grip strap
Secures the operator's hand to the hand grip. Adjusts to fit hand size.

(58) Battery mount
The battery pack serves as a contoured handgrip when attached to the battery mount.

(59) Lens cap hook
This keeps the lens cap from swinging during shooting.



(60) Battery pack release lever
Move in the direction of the arrow to release the battery pack.

(61) Tripod mounting socket

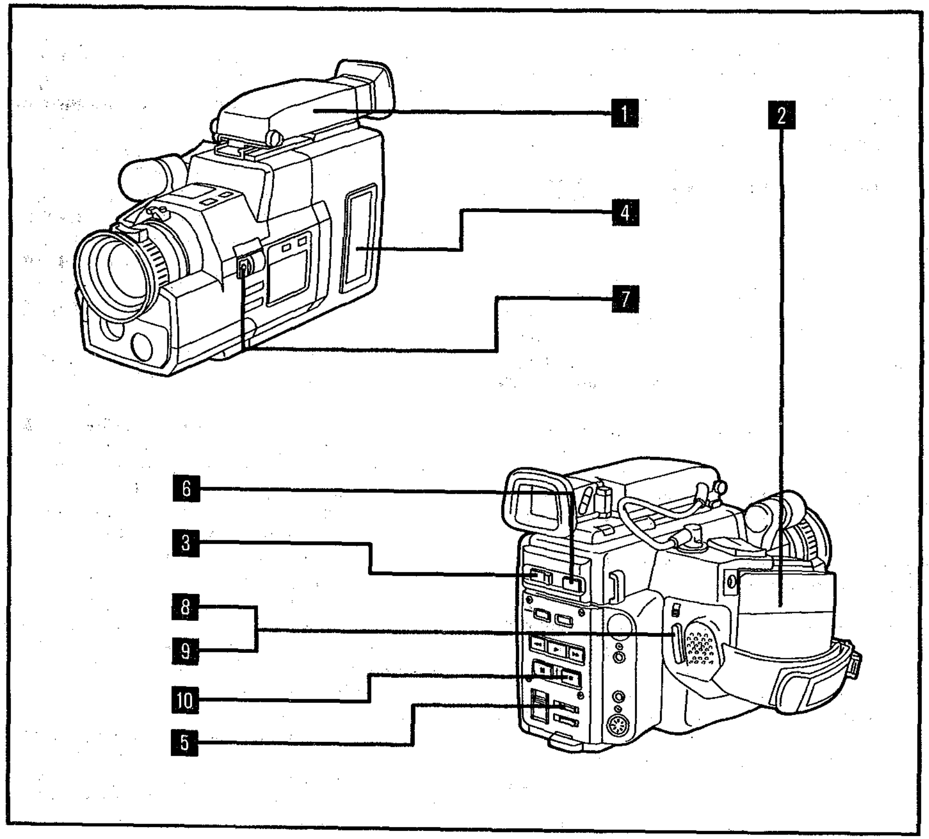
(62) Stud hole

(63) CLOCK battery compartment
Holds the lithium battery that powers the date, time and title memory function.

(64) BLC button
Iris control is always automatic. For backlight compensation, press this button. While it is being pressed, the iris is 1 – 2 f-stops wider than the automatic setting.

(65) FADER button
To fade out the picture to a white blank screen, press this button, then press the recording start/stop button to start fading out. To fade in from a white blank screen, press this button, then press the recording start/stop button to start fading in.

LIVE RECORDING HAS NEVER BEEN SO EASY



Full-auto outdoor recording procedure

1. Mount the viewfinder.
   (Refer to page 11 for details.)
2. Attach the battery pack.
   (Refer to page 13 for details.)
3. Slide Power switch.
4. Pop in a cassette.
   (Refer to page 14 for details.)
5. Set tape speed to SP or EP.
6. Press REC standby button.
7. Press FULL AUTO button.
8. Shoot (push start/stop button).
9. Stop recording (push start/stop button).
10. To end recording, press STOP button.
    - To play back the recorded tape, press REW button and then PLAY.

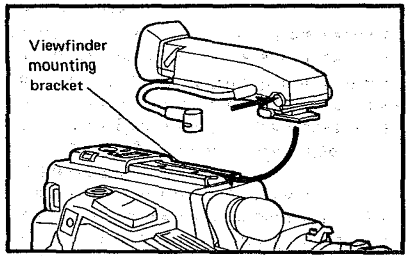
BASIC PREPARATIONS

Mounting the Viewfinder

Switch off power before mounting or removing viewfinder.

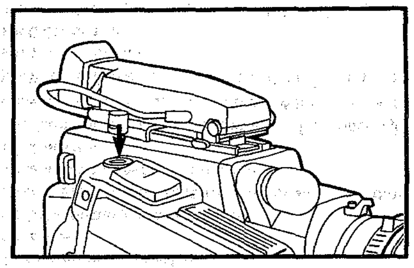
Mounting the viewfinder

1



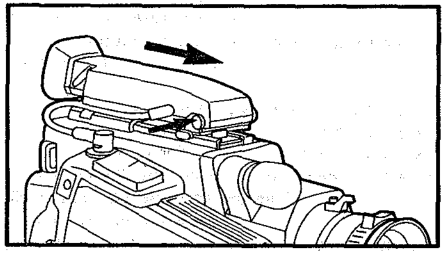
Align the viewfinder's coupling fixture with the mounting bracket on the body and slide the fixture into the bracket while pressing the knob.

2



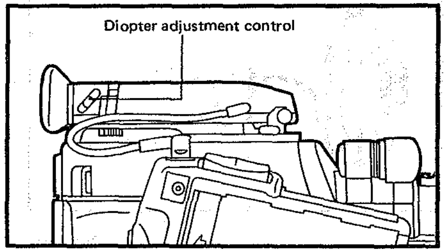
Connect the viewfinder cable to the viewfinder cable connector (VF).

Removing the viewfinder



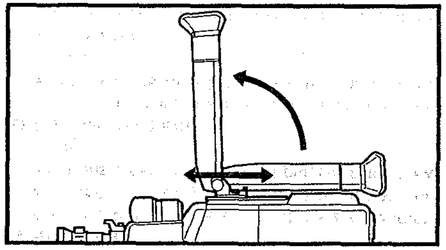
Pull out the viewfinder cable and slide the viewfinder out of the bracket while pressing the knob.

Diopter adjustment



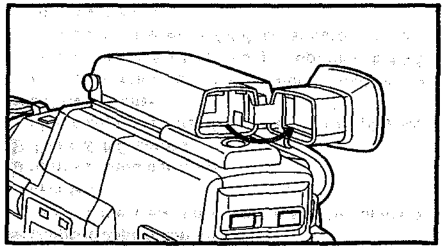
The viewfinder lens can be adjusted to suit the operator's eyesight by sliding the diopter adjustment control.

Positioning the viewfinder



The viewfinder can be positioned for best viewability. It can slide forward or back and can be tilted up 90°.

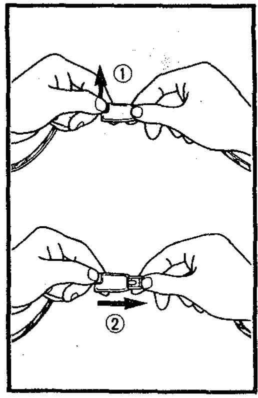
Opening the eyepiece



The viewfinder eyepiece can be opened for cleaning or better viewability in playback.

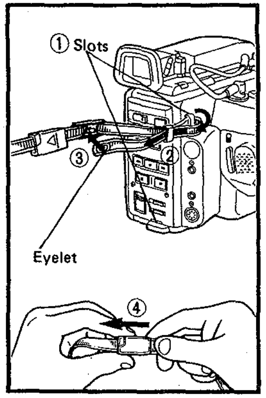
Attaching the Shoulder Strap

1



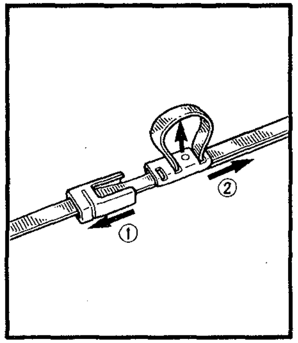
While pressing the release button down and sideway①, slide the buckle out of the buckle shell in the direction of the arrow②.

2


① Slots
③
②
Eyelet
④

Guide the end of the strap through the slot on the GR-40U① and the keeper②, and fasten the strap's eyelet on the buckle's hook③. Then slide the buckle back, as shown, until it clicks④.

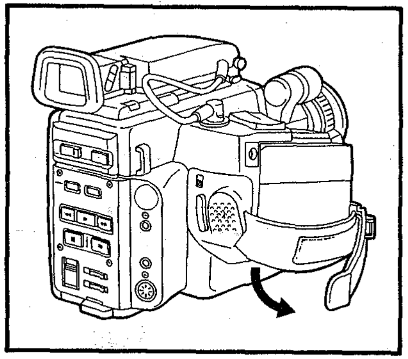
How to adjust the length of the shoulder strap



1. While pressing the release button, slide the buckle out and pull some slack through the buckle.
2. To lengthen the strap, feed the strap from ② toward ①. To shorten it, feed it from ① toward ②.

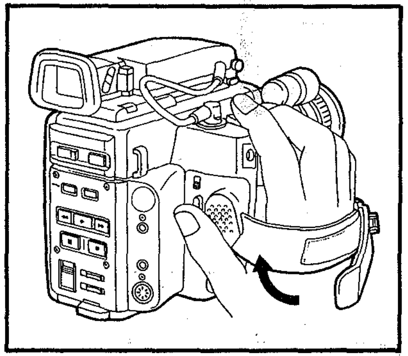
Adjusting the Grip Strap

1



Separate the Velcro strip to expand the loop.

2



Pass your right hand through the loop and grasp the lens grip. Adjust the length of the strap to suit your hand size and refasten the Velcro strip.

POWER SUPPLY SYSTEM

The convenient 3-way power supply system gives you a choice of the most appropriate power supply unit, depending on the application.

CAUTION
- ●No function is available without power supply.
- ●Do not use any power supply other than specified.
- ●Never attempt to use these power supply units with any equipment other than the VideoMovie.

Where AC power is not available

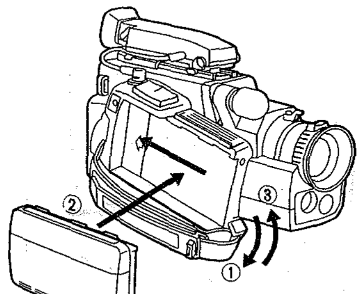
Use the battery packs:
- ●BN-V5GU (Regular)
- ●BN-V6GU (High-capacity)
- ●BN-V7GU (Super High-capacity)

Note:
The battery pack has been kept in the uncharged state for shipment. Therefore, before use, be sure to charge it. See page 33.

Attaching the Battery Pack

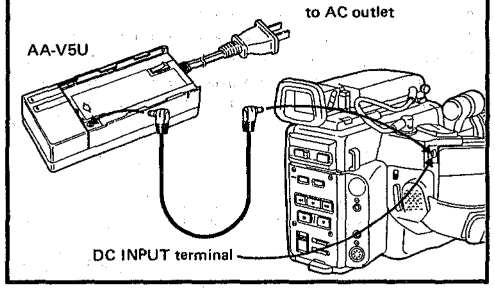
① Pull down the battery pack release lever.
② Align the battery pack over the outline in the battery pack mount, and slide the battery pack into place in the direction of the arrow.
③ Push up on the battery pack release lever, until it locks into place.

To remove the battery pack, pull down the battery pack release lever and slide out the battery.



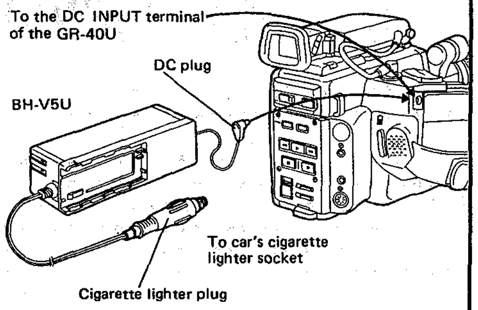
With AC power

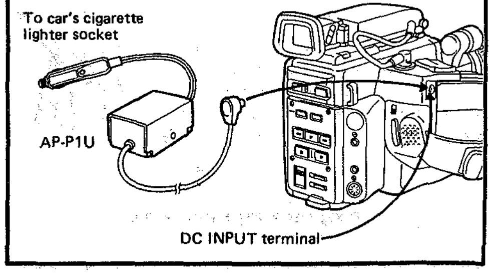
Use the provided AA-V5U AC power adapter/battery charger.


to AC outlet
AA-V5U
DC INPUT terminal

In a car

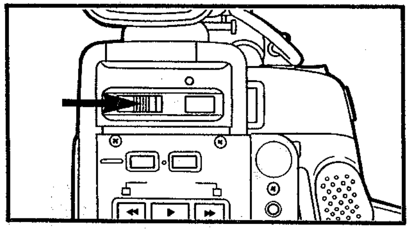
Use the optional AP-P1U car battery cord or BH-V5U car battery charger.
- ●Leave the car's engine idling when using the car battery. (For use with 12 V negative-grounded cars only.)

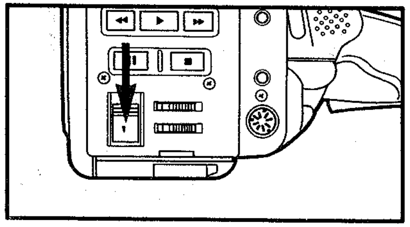

To the DC INPUT terminal of the GR-40U
DC plug
BH-V5U
To car's cigarette lighter socket
Cigarette lighter plug

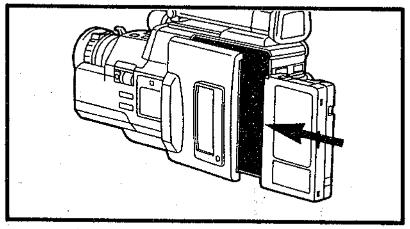

To car's cigarette lighter socket
AP-P1U
DC INPUT terminal

LOADING AND UNLOADING A VIDEO CASSETTE

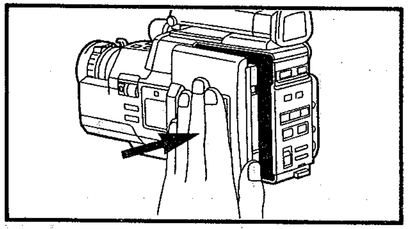
LOADING

1

Slide the POWER switch to turn power on.

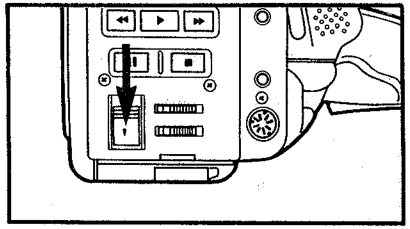
2

Open the cassette holder by pressing the EJECT button.

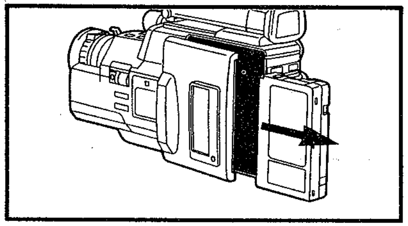
3

Insert the cassette with its printed arrow facing outward.

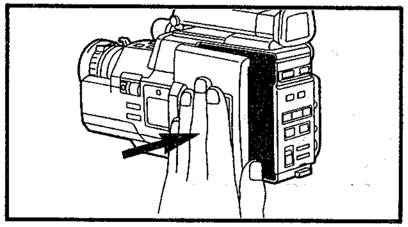
First remove tape slack, then insert the cassette correctly. See page 5.

4

Close the cassette holder by pushing its center area.

UNLOADING

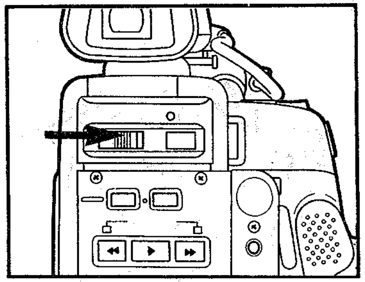
1

Make sure the unit is in the Stop mode. Press the EJECT button. The cassette holder will open.

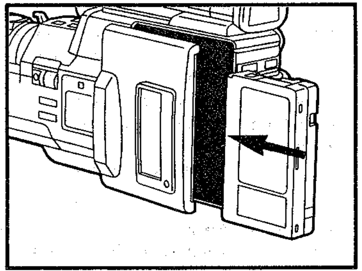
2

Remove the cassette.

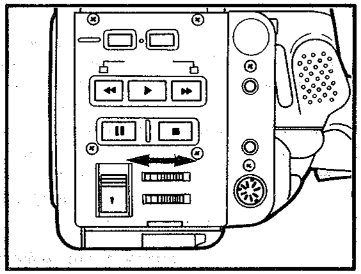
3

Close the cassette holder by pushing its center area.
- When not in use, switch off power.

Notes:
- Do not repeat loading and unloading of the cassette without running the tape, as this will slacken the tape, causing tape damage.

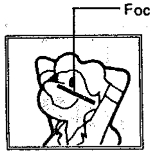
RECORDING OPERATION

1

Slide the POWER switch to ON.

2

Insert a video cassette correctly (with its safety tab in place).

3

Set the tape speed to SP or EP.

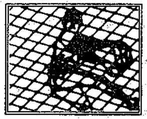
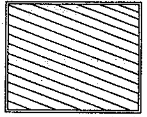
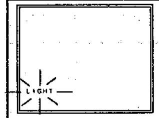
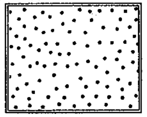
Precautions for auto-focus



- A small area around the center of the picture, which varies depending on the zoom and focus conditions, is used to detect focus. (no actual indication provided on the screen.)

CAUTION
- Do not touch the focus ring while the auto-focus mechanism is in operation.
- Be careful not to cover the auto-focus sensor window, otherwise accurate focusing will not be possible.
- When not in use, do not leave the GR-40U in the Auto-focus mode with power on; otherwise light entering the auto-focus sensor window will operate the auto-focus mechanism, consuming power.

Correct focus may not be obtained in the following situations. In such cases manual focusing should be performed to obtain proper focus.

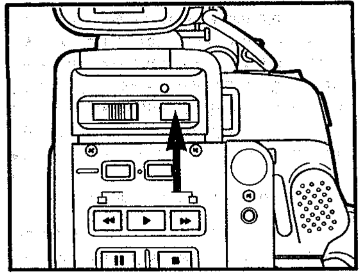
	Two subjects at different distances overlap in the same scene.		Slanted lines only.
	Low illumination where the under-exposure indicator appears on the view-finder screen.		
	Minute patterns or identical patterns that are regularly repeated.		

Note:
- If the lens and/or auto-focus sensor window are smeared with stains or blurred with condensation, accurate focusing is not possible. Keep them clean. If they become dirty, wipe with a piece of soft cloth. When condensation occurs, dry them by wiping with a soft cloth or wait for conditions in which they become dry.

One-hour recording

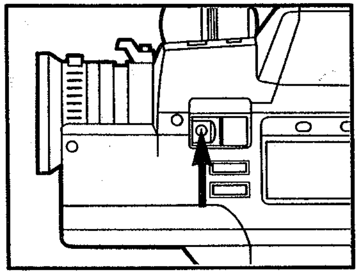
- To record longer on a single cassette, use the EP (Extended Play) mode.
- For EP recording, a higher-capacity battery pack may be used.
- SP: 20 minutes
  EP: 60 minutes

4



Press the REC Standby button. The unit enters the Recording Standby mode (as shown by the indicators in the viewfinder and on the LCD).

5

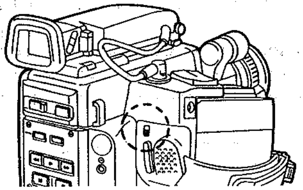


For full-auto operation, press the FULL AUTO button.

For manual override, use the W. BALANCE and FOCUS buttons.

- Press the W. BALANCE button so that the required symbol appears on the viewfinder and on the LCD.
  - ✺: when the subject is illuminated by a halogen or tungsten lamp.
  - ▥: when the subject is illuminated by a fluorescent lamp.
  - ☀: when you shoot in the daytime outdoors.
- When shooting under fluorescent light, always use the fluorescent light setting in the manual white balance mode for best results.
- For manual focus, press the FOCUS button so that MANUAL is shown on the LCD. A focus-aid indicator will appear in the viewfinder.

Trigger alarm system



When the ALARM ON/OFF switch is set to on, an electronic alarm beeps when the Recording start/stop button is pressed to begin recording.
The electronic alarm beeps twice when the Recording start/stop button is pressed for record pause. This alarm helps prevent recording errors.

Auto or manual?

- Iris control is always automatic. Therefore, possible combinations of auto and manual functions are as follows:

Control / Function	FULL AUTO	W. BALANCE	FOCUS	FOCUS W. BALANCE
White balance	Auto	Manual	Auto	Manual
Focus	Auto	Auto	Manual	Manual
Iris	Auto	Auto	Auto	Auto

- Be careful not to cover the white balance sensor window, otherwise correct white balance will not be obtained in the auto mode.
- For high-speed electronic shutter, see page 22.

Elapsed time display

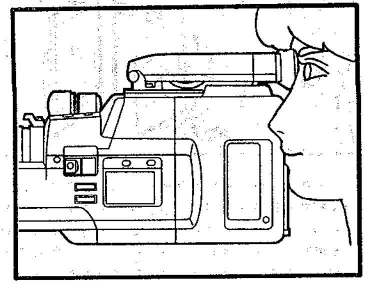
The accumulated recording time (elapsed time) can be displayed on the viewfinder.

1. Set the REC TIME ON/OFF switch to ON. The recording time is displayed on the viewfinder screen.
2. If you wish to reset it to "00:00", press the REC TIME RESET button.

Notes:

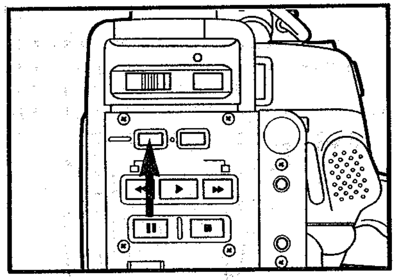
- When you wish to disengage the Elapsed Time Display mode, set the REC TIME ON/OFF switch to OFF.
- 1:00:00 indicates 1 hour has elapsed.
- Unloading the cassette also resets the display to "00:00".
- This convenience functions only when camera shooting is performed.

6



Determine the focus and composition by referring to the viewfinder image. For zooming, see page 24.
For date/time recording, see page 21.

Rehearsal

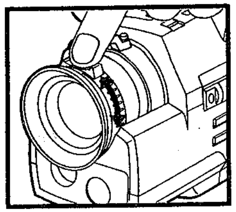


If you wish to rehearse shooting angles, compose scenes, etc., without actually recording on the tape, press the MONITOR button, instead of REC. The aimed-at scene will appear on the viewfinder screen. For full-auto rehearsal, also press the FULL AUTO button. To engage the Recording Standby mode from rehearsal, press the REC button. To disengage the Rehearsal mode, press the STOP button.

- Rehearsal is possible whether a cassette is loaded or not.
- With a cassette loaded, rehearsal is not possible during rewind or fast forward.
- The power save circuit does not function during rehearsal. (For power save function, see page 20.)

Manual focus

If the manual focus mode is selected, proceed as follows:



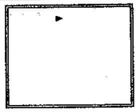
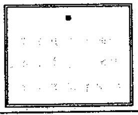
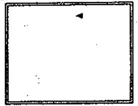
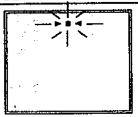
① Zoom in on a subject by pressing the "T" button.
② Focus onto it by turning the focus ring.
③ Determine the composition by pressing the "W" button.

Caution:
Covering the white balance sensor while manually focusing will result in poor color reproduction.

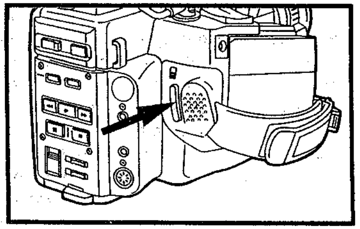
Note:

- When you use the manual focus mode, be sure to focus the lens in the maximum telephoto position. If you focus in on a certain subject in the wide-angle position, sharply-focused images cannot be obtained when zoomed up because the depth of field is reduced at longer focal lengths.

FOCUS INDICATORS
The focus indicators on the viewfinder screen function in the manual focus mode.

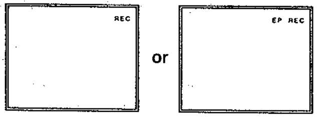
Condition	Indication	Corrective operation
Focus point behind the subject		Turn the focus ring clockwise until the center square lights.
Correct focus		Keep the focus ring in the same position.
Focus point in front of the subject		Turn the focus ring counterclockwise until the center square lights.
Indication not possible because of low contrast		Estimate the subject distance and set the focus ring referring to the distance scale on it.

7

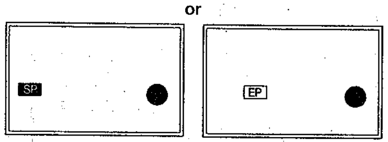


Press the start/stop button.

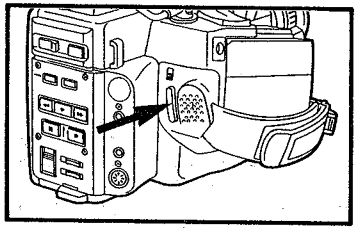
- This causes REC or EP REC to appear on the viewfinder screen, showing that recording is actually taking place.
- Be careful not to touch any buttons inadvertently during shooting.



- The LCD display shows:



8



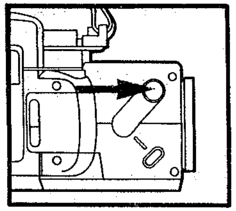
To stop recording temporarily, press the start/stop button once again.

9 To restart recording, press the start/stop button.

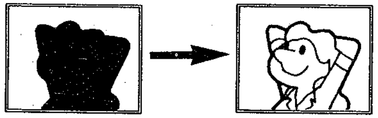
- For a pause longer than 3 minutes, press the POWER switch to OFF.
- If the Recording Standby mode continues for longer than about 5 minutes, the unit switches itself off automatically. To restart recording, turn the power on. This makes clean assembled recordings possible even after a long pause.

Backlight compensation

- Press the BLC button. While it is being pressed, the iris is 1 – 2 f-stops wider than that adjusted automatically.



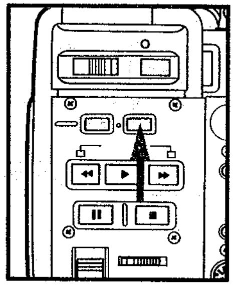
When excessive lighting is located in back of the subject, correct exposure may not be obtainable. To compensate for this, use BLC.



Without BLC With BLC

Quick Review function

- If you want to review the end of the last recording for confirmation, press the QUICK REVIEW/EDIT button from the Recording Standby mode; the tape will be rewound for about 2 seconds for program time and played back automatically for this section, after which it will stop in the Recording Standby mode for the next shot.



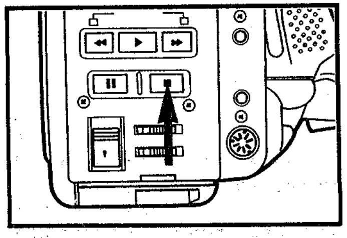
Notes:

- The TRACKING control should be at its center position.
- Distortion might occur when playback starts. This is normal.

Assemble recordings

- Repeating steps 8 and 9 produces assemble recordings. In playback, the picture may be slightly distorted at the point between separate takes. This is not due to any defect of the unit.
- If recording is restarted from the Stop mode, a few frames of the previously recorded picture are replaced with a new recording. To avoid this, follow the technique described in "Assemble Recording Technique-2" on page 20.

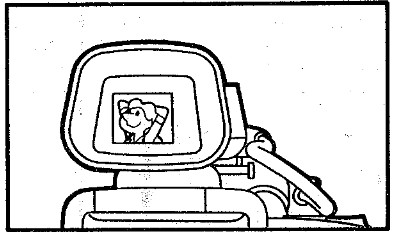
10



To end recording, press the STOP button.

- After making sure that the tape has stopped, press the POWER switch to OFF.

Viewfinder Monitoring

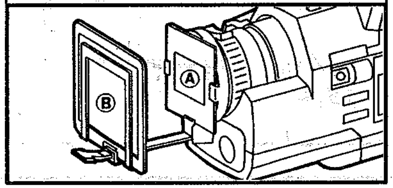


- Rewind the tape to a point from which you want to check the recording.
- Press the PLAY button, and you can view the playback picture on the viewfinder screen.

Notes:

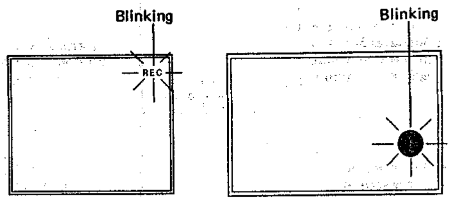
- Pressing the PAUSE/STILL button during playback stops the picture on the viewfinder screen.
- Shuttle search is also possible in both directions.

A photographic slide can be recorded by inserting it in Ⓐ and inserting a blank white card in Ⓑ of the provided title easel. Slides up to 1/8" thick can be used. Illuminate Ⓑ from behind for best results.



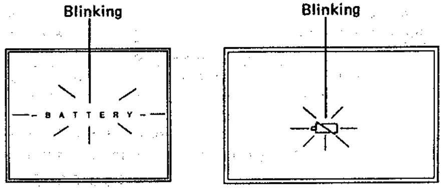
Warnings

Tape-end warning



- The recording indicator blinks on the viewfinder screen and the LCD a few minutes before the end of the tape.
- When the end of the tape is reached during recording, the Stop mode engages automatically.

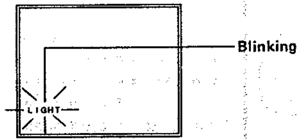
Battery warning



Viewfinder

- When the battery power is coming to an end, a battery warning indication appears in both the viewfinder and the LCD. Replace the battery pack with a fully charged one.
- After these indications appear, the power turns off automatically. In this state, however, pressing the POWER switch while holding EJECT button pressed turns the power on and ejects the cassette.

Low-light warning



- If the blinking "LIGHT" indicator appears on the viewfinder screen, the amount of light is insufficient. Increase the lighting.

POWER SAVE AND TAPE PROTECTION CIRCUIT

- To save battery power, the GR-40U (when battery-operated) switches itself off automatically in the following situations:
  (1) When left for longer than 5 minutes in the Stop mode.
  (2) When left for longer than 5 minutes in the Recording Standby (Record-Pause) mode.
- To protect the tape, the GR-40U (regardless of whether battery-operated or AC-powered) releases tape tension slightly and switches itself off automatically if left for longer than 5 minutes in the Recording Standby (Record-Pause) mode.
- For the same reason, the GR-40U enters the Stop mode and switches itself off automatically if left for longer than 5 minutes in the Still (Play-Pause) mode.

Battery operation

STOP → POWER OFF
5 minutes

Battery/AC operation

REC PAUSE → POWER OFF
5 minutes

PLAY PAUSE (STILL) → STOP → POWER OFF
5 minutes

ASSEMBLE RECORDING TECHNIQUE — 1 (To replace the battery pack during recording)

1 If the battery warning appears in the viewfinder or the LCD while recording, stop recording by pressing the POWER switch to OFF, not the STOP button.

2 Replace the battery pack with a charged one.

3 Press the POWER switch to ON.
- The unit will be in the Recording Standby mode.

4 Press the recording start/stop button to start recording.

ASSEMBLE RECORDING TECHNIQUE — 2 (To record onto a partially recorded tape)

1 Play back the tape to a point where you wish a new recording to start.
- Use the SHUTTLE SEARCH button for faster location.

2 Press the PAUSE/STILL button at the located point.
- The unit will enter the Still mode.

3 Press the REC button.
- The unit will enter the Recording Standby mode.

4 Press the recording start/stop button to start recording.

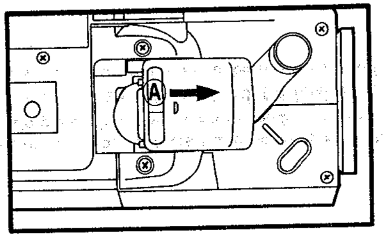
Note:
Some picture distortion may occur at the transition point. This is not due to any defect of the unit.

RECORDING THE DATE/TIME

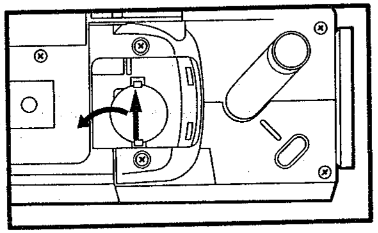
Warning on lithium battery
- Dispose of used battery promptly.
- Keep away from children.
- Do not disassemble and do not dispose of in fire.

Battery insertion
This battery powers the date/time function.
1. Slide the cover off the CLOCK battery compartment on the bottom of the VideoMovie by pressing lightly on the section labelled Ⓐ in the diagram.
2. Insert the provided lithium battery **with the plus (+) side up.**
3. Slide the cover on unit until it clicks.

Note:
- Switch off the unit's power before inserting the battery.



Battery replacement
The battery lasts for about one year. When the lithium battery warning (▶E) appears in the viewfinder, this battery needs to be replaced. Obtain a new CR 2025 lithium battery and follow the following procedure.
1. Remove the battery by pressing the knob in the direction of the arrow.
2. Insert the new CR 2025 **with the plus (+) side up.**
3. Slide the cover back until it clicks.



Note:
Switch off the unit's power before removing old battery.
Replace battery with Matsushita type CR 2025 only. Use of another battery may present risk of fire and explosion.

Date/time setting
Before adjusting the date and time for the first time or after replacing the batteries, JAN. 1.88 blinks in the viewfinder, indicating the clock needs to be set.

① Switch the unit's power on, JAN. 1. 88 will blink in the viewfinder. Press MONITOR button to enter rehearsal mode.
② Press the DATE/TIME SELECT button — the year blinks.
③ Press the DATE/TIME SET button to choose the correct number.
④ Press the DATE/TIME SELECT button to select the next item to change, with the item selected changing in the following sequence:

→Year → Month → Day → Hour → Minute → Finish Adjustment ↩

⑤ Repeat steps ② and ③ to set all items. After the minute setting has been performed, press the DATE/TIME SELECT button, and items will cease blinking, and the clock will resume normal function. For the auto date record mode, the auto date record reserve indicator will appear.

Date/time recording
The date, time, or date and time can be displayed and recorded according to the selected mode. Press the DATE/TIME MODE button to cycle through the modes in the following order:

→ Auto date record reserve → Date display → Date/time display → Time display ↩

- When the auto-date-record function is selected, "—.—.—" appears in the viewfinder, until recording begins. As long as this function is chosen, the date will be automatically displayed and recorded for 5 seconds following the first operation of the recording start/stop button after the power is turned on.
- Auto date record reserve indication will cease to be displayed, if the DATE/TIME ON/OFF button is set to OFF unless power is provided again.

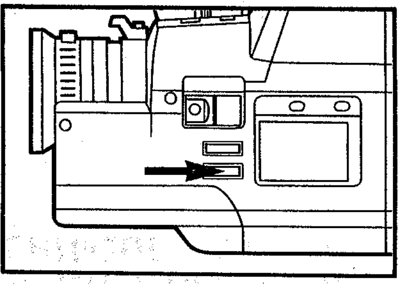
Date/time recording indications

Auto date record		Date display	Date/time display	Time display
—.—.— Auto date record reserved	DEC.31.88 Auto date record executed	DEC.31.88	DEC.31.88 AM 12:30	AM 12:30

MULTIPLE-SPEED ELECTRONIC SHUTTER

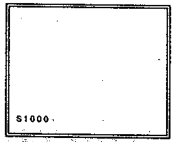
The GR-40U is equipped with a selectable high-speed shutter that allows better recording of quick movements for sharp, clear stills or slow-motion playback. Select it when taping fast-action shots that you will want to play back later in still or slow-motion mode.

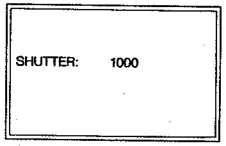
1



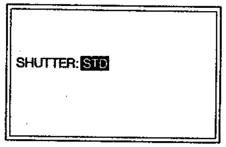
Press the SHUTTER button to switch to the desired electronic shutter speed. This can be done while recording or in any other mode. It continues at the selected speed until switched to another speed.

When selected, the High-Speed Shutter mode is indicated on the viewfinder screen and LCD.

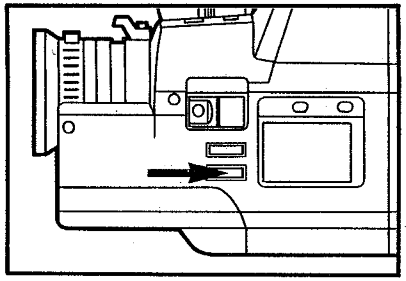




The Standard Shutter mode is indicated by STD on the LCD.



2



When finished recording the fast-action scene, switch back to the standard shutter speed by pressing the SHUTTER button until STD appears on the LCD.

Notes:

- The High-Speed Shutter mode requires slightly more subject illumination than the Standard Shutter mode. Therefore, the low-light warning may blink in the viewfinder. If so, switch to the Standard Shutter mode.
- Picture color may be adversely affected in the high speed shutter mode when the subject is lit by alternating discharge-type light sources such as fluorescent or mercury-vapor lights.
- When playing back a section recorded in the high-speed shutter mode, movement of subjects in the picture may not be smooth. This is not due to any defect of the unit.

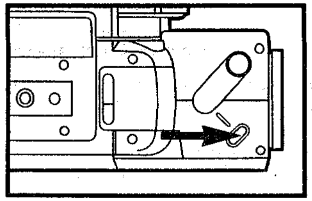
SPECIAL TECHNIQUES

Fade-in/out

The GR-40U is equipped with an automatic fade mechanism for allowing smooth fade-in and fade-out with a white-colored blank screen. Audio also fades in sync with video.

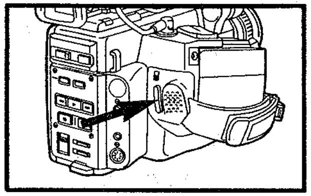
Automatic fade-in

1

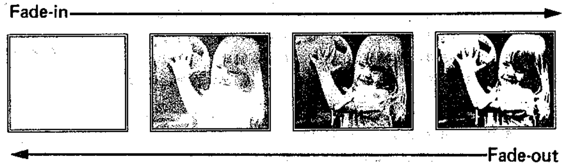


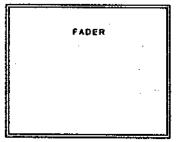
Determine the composition in the Recording Standby mode and press the FADER button to reserve the fade-in mode.

2



Press the start/stop button. The screen will quickly become white and recording begins. When the start/stop button is released, fade-in will start. It will be completed in about 5 seconds. If the start/stop button is not released when pressed, the white picture will remain on the screen and be recorded.



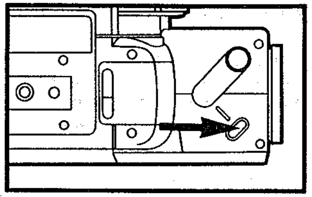


FADER is displayed in the viewfinder when fading is reserved, and continues to be displayed until fading in or out is completed.

Automatic fade-out

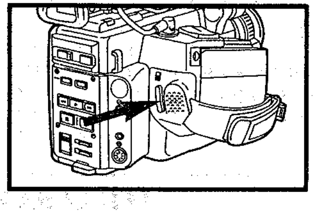
1 Start shooting as usual.

2



Press the FADER button to reserve the fade-out mode.

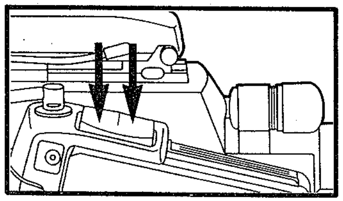
3

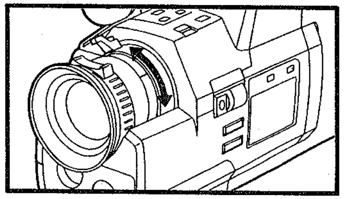


Press the start/stop button. Fade-out will start and be completed in about 5 seconds. When completed, Recording standby mode is entered. If the start/stop button is not released when pressed, the final white picture remains on the screen and continues to be recorded, until the button is released.

Zooming

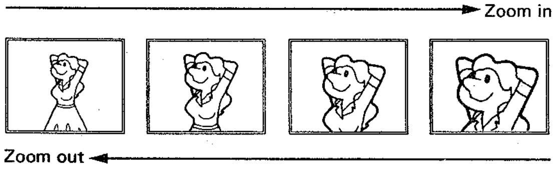
When the focal length of the lens is varied by turning the zoom ring, the image appears to come nearer to or retreat from the viewer.





Power zooming

Press "T" for zooming in and "W" for zooming out. Two zooming speeds are available. For slow-speed zooming, press lightly. For regular-speed zooming, press firmly.

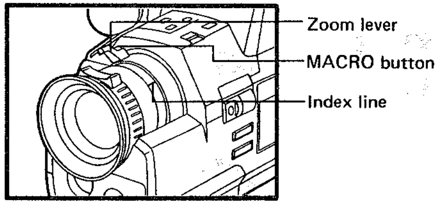


Manual zooming

Rotate the zoom lever downwards for zooming in and upwards for zooming out.

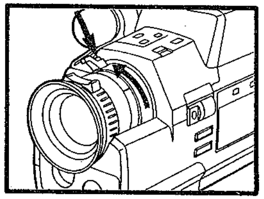
Macro Shot

Normally, focusing is possible only for subjects that are more than 1.1 m (3.6 ft) away from the camera. By setting the lens to the Macro mode, it is possible to manually focus in on any subject located inside that limit, right up to the front of the lens. The MACRO and ZOOM ranges combined give continuous shooting ability from close-up to infinity.



Engage MACRO

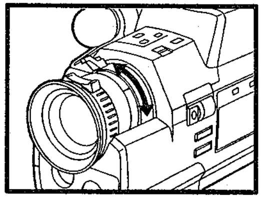
1



While pressing in the macro button, turn the zoom lever in the direction of the arrow until the number "9" on the zoom ring passes the index line.

Focus

2

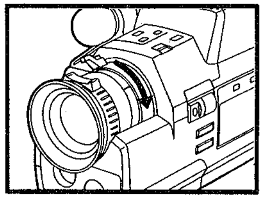


Focus by turning the zoom lever slowly.

- Use the zoom lever to focus in the MACRO range.
- Turning the zoom ring will slightly alter the angle of view of the lens.
- The auto-focus mechanism does not function during macro shooting.

Release MACRO

3



To release the Macro mode, turn the zoom lever in the direction of the arrow until the number "9" passes the index line.

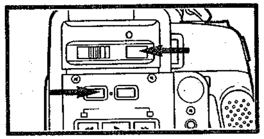
Note:
It is advisable to increase illumination when shooting in macro for best results.

DIGITAL SUPERIMPOSE

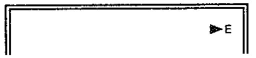
The GR-40U's Digital Superimpose function allows 4 titles to be superimposed on a recording in a choice of 8 colors and either positive or negative (reversed) styles for more creative video opportunity.

Storing Titles

1

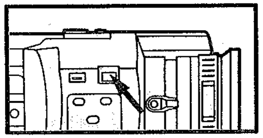


Put the unit into the REC PAUSE or REHEARSAL mode.



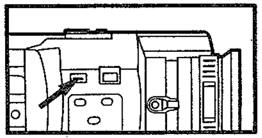
- When the "E" indication (lithium battery warning) appears in the viewfinder, titles cannot be stored. Insert the lithium battery, or replace the inserted one with a new one according to the instructions on p. 21.

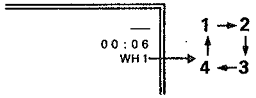
2



Press the TITLE ON/OFF button.

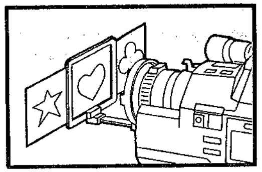
3

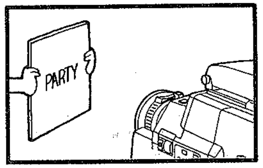




Use the PAGE button to select the page of memory in which you want your title to be stored. The page number will appear on the viewfinder screen.

4

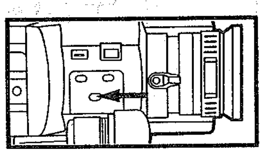




Aim the unit at your title in as well-lit a location as possible. You may also use the provided Title Easel for this purpose.

- If, at this point, the vertical stripes or an old title appearing in the viewfinder prove bothersome, press the TITLE ON/OFF button to turn it off.
- When storing a title, the scene visible in the viewfinder may differ slightly from that which will be recorded on the tape.

5



Press the TITLE MEMORY button for about 1 second to store the title.

- When a title is stored poorly, check to see that the lighting is adequate and that the title is drawn with bold strokes, then shoot the title again.
- Every time the TITLE MEMORY button is pressed, the previously recorded title stored in that page of memory will be erased, and replaced with the new title.

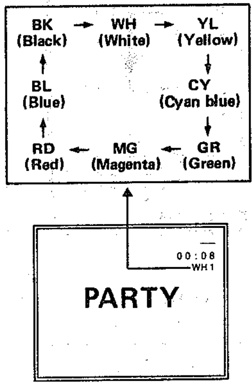
Creating Titles

Make note of the following guidelines to assure best results.

1. Create titles using dark colors on light backgrounds — black writing on white paper, for example.
2. Letters should be drawn with broad strokes.

6 Press the COLOR button to select the color in which you want your title to appear.

The colors will cycle in the following order:



7 Press the IMAGE REVERSE button to choose negative or positive style.

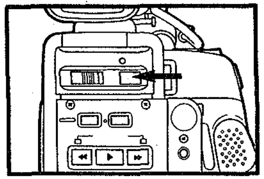
To store additional titles, in digital memory pages 2-4, repeat steps 3-7 as above.

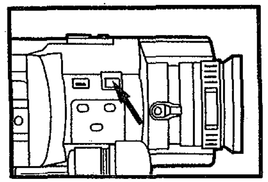
- The TITLE MEMORY button works in both the Rec. Pause and Rehearsal modes; care should be exercised not to press TITLE MEMORY accidently as this will erase stored titles.

- The page selection can be changed when the TITLE ON/OFF button is ON.
- When a page of memory contains nothing, it is "empty", and a pattern of vertical stripes will appear in the viewfinder.
- When the power is turned off or the unit is put into the Stop mode, the PAGE mode returns to the page 1 position.

Mixing a title into a recording

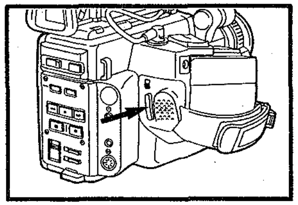
- Starting at the beginning of a recording:

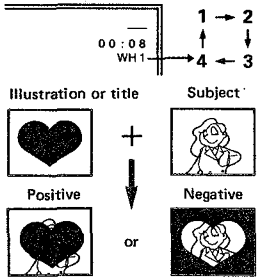
1

Put the unit into the REC PAUSE mode.

2

Press the TITLE ON/OFF button to display your title on the viewfinder screen.

3 Press the PAGE button until the title you wish to use is displayed. The pages will cycle from 1 to 4.
Confirm the page, the color, and the neg/posi style. Color choice and neg/posi style can be changed at this point; Press the COLOR button to select a different color, and the IMAGE REVERSE button to choose neg/posi style.

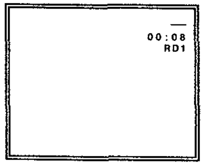
4 Press the unit's trigger to begin recording. The title will now be mixed with what you are recording.
Press the TITLE ON/OFF button when you wish to end the titled portion of your recording.

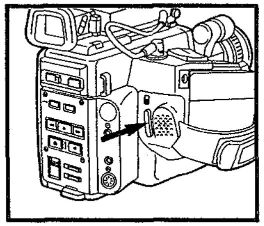


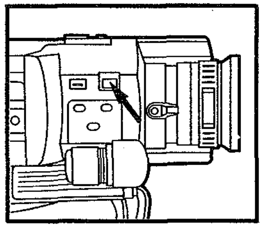


Mixing in the middle of a recoding

1 Confirm the page, color, and neg/posi style of your title.
Press the TITLE ON/OFF button to turn it off.



2

Shoot your live scene by pressing the VideoMovie's trigger.
Press the TITLE ON/OFF button when you wish to insert your title. It will be inserted into your ongoing recording at exactly that point.

3

Press the TITLE ON/OFF button again to end the mixing of your title with the action you are recording.

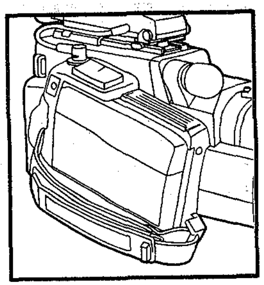
Notes:

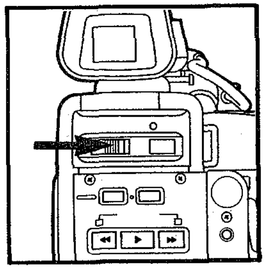
- Color choice, page number, and IMAGE REVERSE selections can be changed when the title is displayed in the viewfinder.
- The "Color" and "Page number" indications displayed in the viewfinder will not be recorded on the tape.
- When an "empty" page is called from memory, a pattern of vertical stripes will appear in the viewfinder.
- When the lithium battery for the unit's clock is exausted, stored titles may be lost. For best results, replace the lithium battery before its one year required replacement date. When the lithium battery warning appears in the viewfinder, as long as power is still supplied to the unit by the main battery pack, or from an AC source (even if the unit's power switch is off), the digital memory will be retained, however, the lithium battery should be replaced at this time.

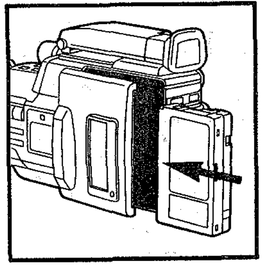
PLAYBACK

The GR-40U permits playback of recorded VHS C video cassettes.
For connections refer to pages 29 and 30.

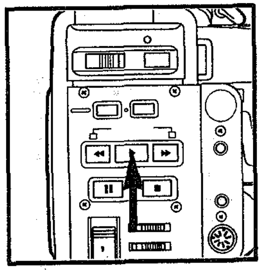
Preparations
- With a television equipped with audio/video input connectors, set the television's TV/VIDEO switch to VIDEO.
- With a regular television receiver, set the antenna select switch of the RF-V3U RF unit to VIDEO and the TV receiver's channel selector to your video channel (3 or 4).

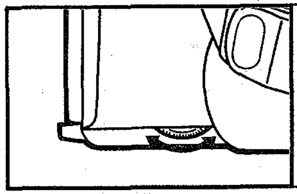
1

Connect a power supply unit. (Battery or AC operation: see page 13.)

2

Press the POWER switch to ON.

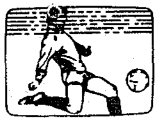
3

Insert a pre-recorded cassette.

First remove tape slack, then insert the cassette correctly. See page 5.

4

Press the PLAY button. Playback will start.
- The SP/EP switch may be in either position. The SP or EP mode recording is automatically detected and played back at a correct speed respectively.
- When the end of the tape is reached during playback, the Rewind mode engages automatically.

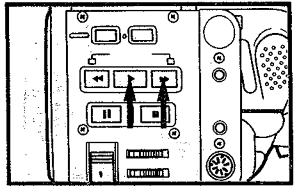


Tracking adjustment
If noise bars appear on the screen, adjust the TRACKING control. Turn it slowly in either direction to minimize noise bars. After playing a particular tape, return the TRACKING control to the center position.



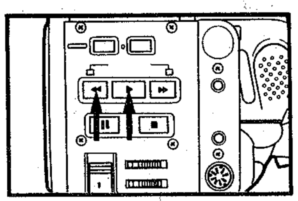
Shuttle Search

Fast-speed playback in the forward direction



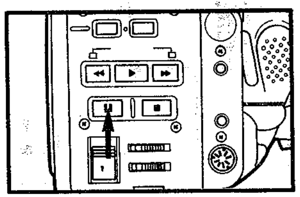
Press the FF button in the Play mode. Playback will be speeded up to 3 times normal speed in SP mode, 7 times normal speed in EP mode, as long as the button is being pressed.

Fast-speed reverse playback



Press the REW button in the play mode. The tape will be played back in the reverse direction at 3 times normal speed in SP mode, 7 times normal speed in EP mode, as long as the button is being pressed.

Still playback



Press the PAUSE/STILL button during playback. The picture will stop on the screen.

- After about 5 minutes of still playback, the unit enters the Stop mode automatically, for tape protection, and switches itself off.

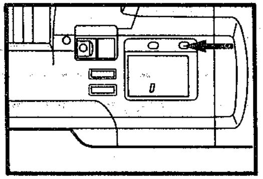
Notes

- Noise may appear on the screen during Shuttle Search and still playback. This is not due to any defect of the unit.
- Pictures may become monochrome during Shuttle Search in the SP mode. This is not due to any defect of the unit.

Counter Memory Function

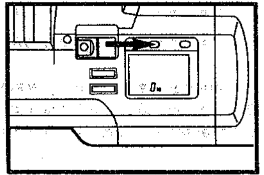
The GR-40U incorporates a counter memory mechanism which facilitates locating a specific tape segment.

1



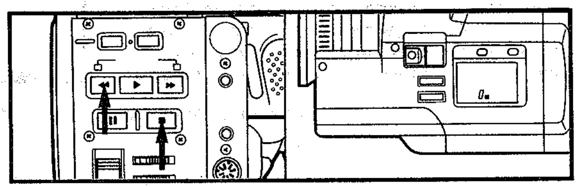
Press the RESET button to reset the counter to "0".

2



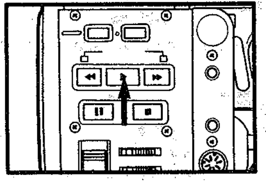
Press the MEMORY button. The "M" mark will appear.

3



After recording or playback, press the STOP button, then the REW button. The tape will automatically stop at the counter reading of around "0".

4



Press the PLAY button to start playback.

Notes:

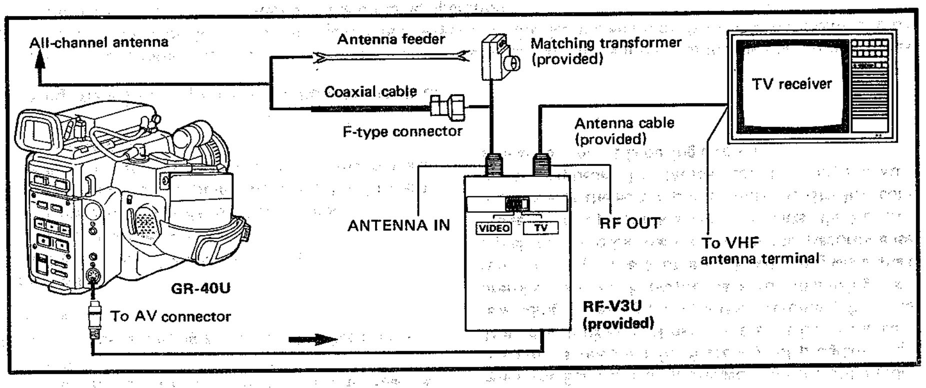
- The counter memory function is effective in the Fast Forward mode as well.
- To cancel the memory function, press the MEMORY button.
- When the power supply unit is disconnected, all indications on the LCD disappear and the counter memory function is instantly cancelled.

CONNECTIONS FOR PLAYBACK

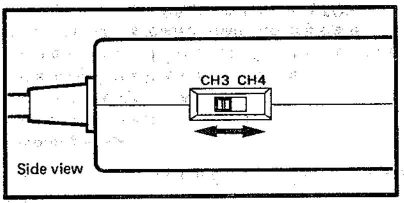
The GR-40U includes playback circuits and allows playback of pre-recorded cassettes simply by connecting it to a television set.

Connection to a television not equipped with audio/video input connectors

For this situation, use the RF-V3U RF unit (provided).



1



Set the output channel select switch of the RF-V3U to CH3 or CH4.

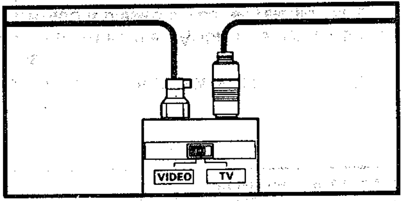
- The RF unit permits playback of video and audio recordings through a TV receiver. The signals from the RF unit are viewed through a vacant channel not used for broadcasting in your area.
- The RF unit has been set to CH3 prior to shipment. Reset the channel to CH4 (using a screwdriver) in areas where channel 3 is employed for broadcasting.
- This is your video channel. To view video cassettes, always set the TV channel selector to either channel 3 or 4.

PRECAUTIONS FOR RF-V3U

- For exclusive use with the VideoMovie.
- Do not disassemble or remodel the RF-V3U.
- Do not expose it to strong shocks.
- Unplug the connected equipment during lightning storms.
(Never touch the antenna cable.)

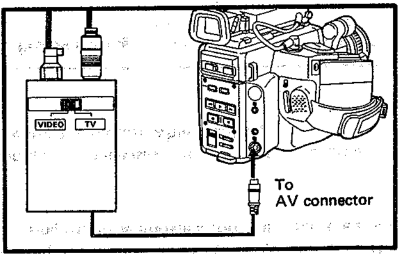
2 Remove the antenna cable from the TV receiver.

3



Connect the antenna cable to the ANTENNA IN terminal of the RF unit.
Connect the RF OUT terminal of the RF unit to the 75-ohm coaxial antenna terminal of the TV receiver using the provided antenna cable.

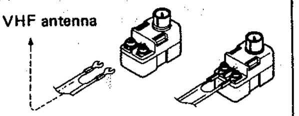
4



Connect the VIDEO/AUDIO INPUT cable of the RF unit to the AV connector of the GR-40U.

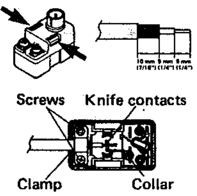
How to affix the matching transformer to your VHF antenna cable

- If your VHF antenna cable is a 300-ohm flat feeder, connect the two lugs to the screws in an ordinary manner.


VHF antenna

- If your VHF antenna cable is a 75-ohm coaxial cable, proceed as follows:

① Press both side tabs inward and slide the cover off.
② Strip the coaxial cable with a pair of wire strippers, a knife, or the like as shown.
③ Remove the collar and put it on the pole inside the cover.
④ Loosen the screws for the clamp and insert the stripped cable so that the braided portion is positioned under the clamp.
⑤ Insert the stripped end (core conductor) of the cable from above into between the knife contacts.
⑥ Tighten the screws. ⑦ Replace the cover.


10 mm (7/16") 5 mm (1/4") 5 mm (1/4")
Screws
Knife contacts
Clamp
Collar

OPERATION

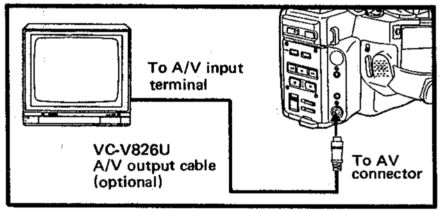
Viewing video cassettes being played back with the GR-40U

To view video cassettes or to monitor the recording, set the VIDEO/TV switch of the RF unit to VIDEO and the TV channel selector to the channel corresponding to the RF output channel (3 or 4).

Viewing television programs

Set the VIDEO/TV switch to TV, and the TV receiver will function as usual.

Connection to a television equipped with audio/video input connectors


To A/V input terminal
VC-V826U
A/V output cable (optional)
To AV connector

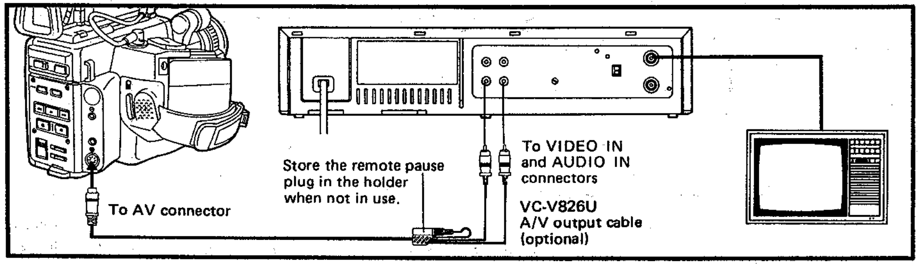
- Simply connect the AV connector of the GR-40U to the VIDEO and AUDIO IN connectors of the television using the provided A/V output cable.
- The provided A/V output cable can be extended by 5 m (16 ft) with the optional VC-P1U A/V extension cable.
- Use the VIDEO (or A/V) mode specified on the television, instead of tuning to channel 3 or 4

TAPE DUBBING OR EDITING

Dubbing onto a standard recorder

Connection

1. Set the DUBBING ON/OFF switch to ON.
2. Connect the AV connector of the GR-40U to the AUDIO and VIDEO IN connectors of the video recorder using the optional A/V output cable VC-V826U.
3. Connect a television to the video recorder to monitor the picture while dubbing.


To AV connector
Store the remote pause plug in the holder when not in use.
To VIDEO IN and AUDIO IN connectors
VC-V826U
A/V output cable (optional)

Operation

- Put the GR-40U in the Play mode and the connected recorder in the Record mode to copy the recording. To edit out unwanted material, press the recorder's PAUSE button.

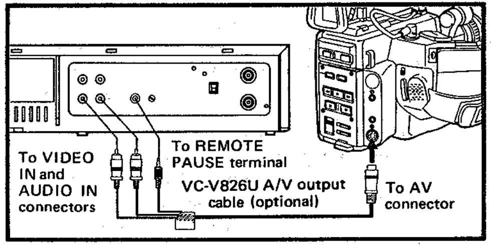
There are some VCRs which are not compatible with Master Edit Control. For these units, use the VCR's pause control to perform edit-in or edit-out functions.

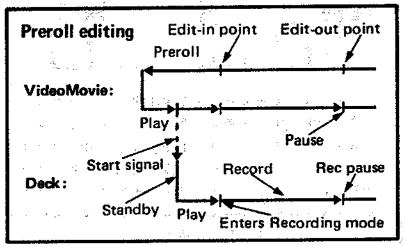
Using the Master Edit Control System

This function is available when using **designated** JVC video decks equipped with a remote pause terminal. The Master Edit Control system allows control of the connected deck using the VideoMovie's controls, preroll editing for edits free of transition-point gaps and distortion.

Connection

1. Set the DUBBING ON/OFF switch to ON.
2. Connect the AV connector of the GR-40U to the AUDIO and VIDEO IN connectors and remote pause terminal of the video recorder.
3. Connect a television to the video recorder to monitor the picture while dubbing.


To VIDEO IN and AUDIO IN connectors
To REMOTE PAUSE terminal
VC-V826U A/V output cable (optional)
To AV connector


Preroll editing
Edit-in point
Edit-out point
Preroll
VideoMovie:
Play
Pause
Start signal
Deck:
Record
Rec pause
Standby
Play
Enters Recording mode

Operation

Dubbing can be initiated from Stop mode or Still mode.

- **For dubbing a tape**

1. Switch on the VideoMovie's power.
2. Switch on the deck's power.
3. Put the deck in the Record-Pause mode.
4. Press the QUICK REVIEW/EDIT button to start editing. The tape is loaded, then dubbing starts.
5. Tape stops when the PAUSE/STILL or STOP button of the GR-40U is pressed or counter reaches "M, 0".
6. Deck stops recording and enters the Record-Pause mode

- **For editing**

1. Switch on the VideoMovie's power.
2. Turn on the deck's power.
3. Put the deck in the Record-Pause mode.
4. Locate the edit-in point via play, fast-forward, rewind, or Shuttle Search, and press the PAUSE/STILL button.
5. Press the QUICK REVIEW/EDIT button to start editing.
6. Tape stops when the PAUSE or STOP button of the GR-40U is pressed or counter reaches "M, 0".
7. Deck stops recording and enters the Record-Pause mode.

Note:

When the EDIT button is pressed from the Still mode, the tape is rewound for 5 seconds of program time. The Play indicator blinks on the LCD to indicate rewinding is taking place. After prerolling, first the prerolled section is played back for stabilizing tape run. During playback of the GR-40U, it gives a start signal to the deck standing by in the Record-Pause mode to start playback and then to enter the Recording mode at the edit-in point, while the GR-40U continues playback. The Master Edit Control indicator appears on the LCD during dubbing.

Setting the edit-out point using counter memory

In the above procedures, counter memory can be used to set the edit-out point before editing takes place, so that the VideoMovie automatically stops playback at the designated point. If the edit-out point is to be set in this way, do so following step 3 of the dubbing operation.

1. Locate the desired edit-out point on the VideoMovie's tape.
2. Press the VideoMovie's PAUSE/STILL button.
3. Reset the VideoMovie's counter to "0".
4. Press the VideoMovie's counter MEMORY button.
5. The VideoMovie enters the Pause mode, and the deck enters the Record-Pause mode.

Note:

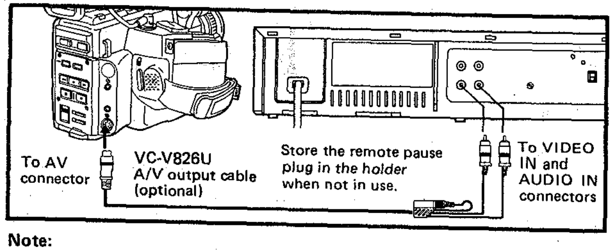
When the tape reaches the preset edit-out point during the dubbing operation, it may stop slightly before or after the designated point on the tape.

USING THE GR-40U AS A VIDEO CAMERA

For continuous documentation of longer events, the GR-40U can be used as an independent video camera in combination with either a deck-type or portable video recorder.

Using a recorder not equipped with a remote pause terminal

- Connect the AV connector of the GR-40U to the AUDIO and VIDEO IN connectors of the video recorder using the optional A/V output cable VC-V826U.


To AV connector
VC-V826U
A/V output cable
(optional)
Store the remote pause plug in the holder when not in use.
To VIDEO IN and AUDIO IN connectors

Operation

1. Press the MONITOR button. The camera output signal is now available via the A/V output cable.
2. Put the connected recorder in the Record mode. Recording will start. Tape start/stop should be controlled with the recorder's buttons.

Note:

- In this configuration, it is possible to obtain a continuous recording and an edited-out recording of the same event simultaneously, because the GR-40U's start/stop button only controls the tape inside itself while another tape loaded in the connected recorder continues running. To record on the GR-40U's tape, follow the same recording procedure as mentioned before: press REC standby and then the start/stop button.

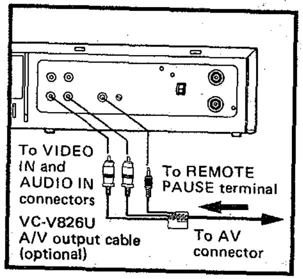
Using a recorder equipped with a remote pause terminal or with a 10-pin camera connector

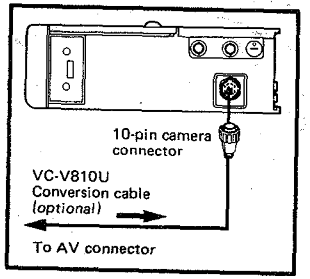
For a recorder with a remote pause terminal

- Connect the AV connector of the GR-40U to the AUDIO and VIDEO IN connectors and remote pause terminal of the video recorder using the optional A/V output cable VC-V826U.

For a recorder with a 10-pin camera connector

- Connect the AV connector of the GR-40U to the 10-pin camera connector of the second recorder using the optional VC-V810U conversion cable.





Operation

1. Press the MONITOR button.
2. Put the connected recorder in the Recording Standby (Record-Pause) mode.
   - The viewfinder's mode indication corresponds to the state of the connected recorder.
3. Press the start/stop button of the GR-40U to start recording.

Note:

- To record on the GR-40U's tape as well, press the REC Standby button and then the start/stop button.

Precautions

- Power is not supplied to the GR-40U from the connected VCR. Independent power supply is required for both the GR-40U and the VCR.
- If you stop recording by pressing the GR-40U's start/stop button, the connected VCR also stops in the Pause mode. However, the pause command signal is not delivered to the connected VCR in the following cases and, therefore, the VCR will start automatically:

(1) when the GR-40U is switched off or its battery becomes discharged.

(2) when the VC-V810U cable is disconnected.

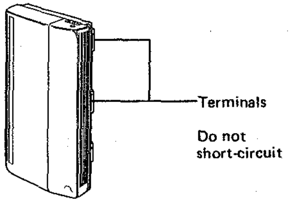
Therefore, before replacing the battery or tape for the GR-40U, put the connected VCR either in the STOP or REC LOCK mode.

CHARGING THE BATTERY PACK

To charge the battery pack, use the exclusive AC power adapter/battery charger AA-V5U (provided/optional) or car battery charger BH-V5U (optional).

A WORD ON THE EXCLUSIVE BN-V5GU/V6GU/V7GU BATTERY PACKS

The BN-V5GU/V6GU/V7GU are nickel-cadmium batteries. Give attention to the following to make the most of their characteristics.



Temperature ranges:

The recharging time is based on room temperature of 20°C (68°F).
The lower the temperature, the longer the recharging time.
For charging: 10°C to 35°C (50°F – 95°F)
For operating: 0°C to 40°C (32°F –104°F)
For storing: -10°C to 30°C (14°F – 86°F)

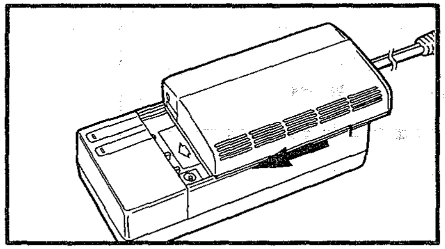
The battery pack has been kept in the uncharged state for shipment. Therefore, before use, charge it.
BE SURE TO CAREFULLY READ THE CAUTION ATTACHED TO THE BATTERY PACK.

Charging procedure

Charging time

BN-V5GU 50 min.	BN-V6GU 70 min.
BN-V7GU 80 min.	

- The charging time differs depending on the ambient temperature and the condition of the battery pack.



1 Connect the AC power cord to a wall outlet. (The POWER indicator will light.)

2 Align the marks on the battery pack and adapter.

3 Slide the battery pack in the direction of the arrow until it locks in place.

4 When charging is completed, the CHARGE indicator goes out.

PRECAUTIONS

- If used near a radio, the provided AA-V5U AC power adapter/battery charger may interfere with reception.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble or modify the unit.
- Do not apply shocks to the unit.
- Do not subject the unit to direct sunlight.
- Avoid using the unit in extremely hot or humid places.
- Avoid using the unit in places subject to vibrations.

Note:
The optional BH-V5U Car Battery Charger can charge the batteries from a car battery. For details refer the instructions of the BH-V5U.

Recording time for the GR-40U

BN-V5GU 30 min.	BN-V6GU 60 min.
BN-V7GU 90 min.	

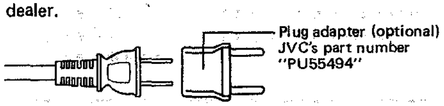
- The recording time per charge is influenced by the duration of recording standby, frequency of zooming, etc. It is safer to have spare battery packs.

When using the AA-V5U in areas other than the USA.

USING HOUSEHOLD AC PLUG ADAPTER

In case of connecting the unit's power cord to an AC wall outlet other than American National Standard C73 series type, use an AC plug adapter, called a "Siemens Plug", as shown below.

For this AC plug adapter, consult your nearest JVC dealer.

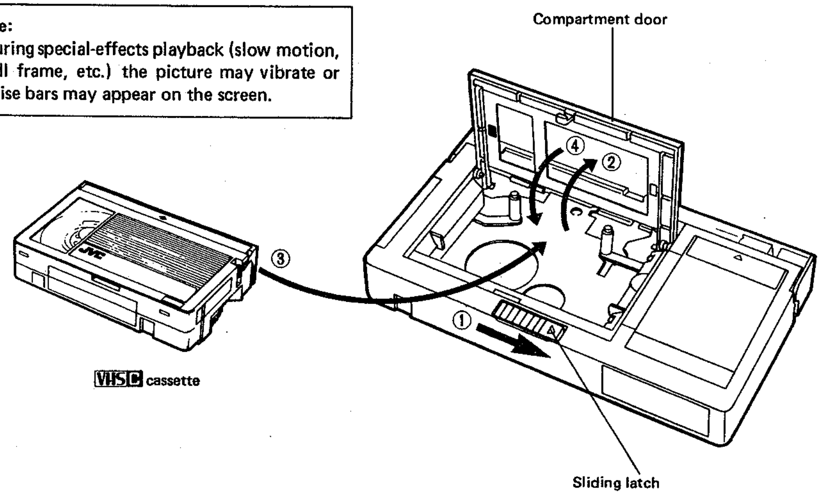


USING THE CASETTE ADAPTOR (provided)

The VHS compact video cassettes recorded with the GR-40U can be played back with a standard VHS machine by using the provided C-P5U Cassette Adapter.
(A compact video cassette installed in the cassette adapter is fully compatible with a standard VHS machine for both recording and playback.)

- **C-P5U Cassette Adapter**
  Being battery-operated, the C-P5U performs tape loading and unloading automatically.

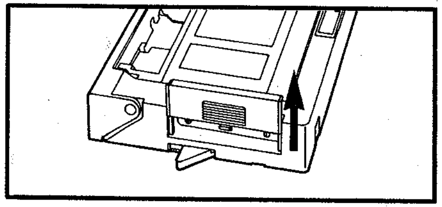
Note:
- During special-effects playback (slow motion, still frame, etc.) the picture may vibrate or noise bars may appear on the screen.



For more details refer to the instruction manual of the C-P5U.

Inserting the battery into the cassette adapter

Remove the battery cover by sliding it up.
Install one "AA" battery and reattach the cover.



General Battery Precautions

- When the unit is not operating even when correctly operated, the batteries are exausted. Replace them with fresh AA batteries.
- Use only AA size batteries in the remote control unit. Please make note of the following rules for battery use. When misused, batteries can leak or explode.

1. Insert the batteries correctly according to the diagram inside the battery section.
2. Do not use old and new batteries together.
3. Do not use two different kinds of batteries. Although sizes may be the same, voltages may differ.
4. Do not expose batteries to excessive heat as they can leak, or explode. Do not dispose of batteries in a fire.
5. Remove batteries from the unit if it is to be stored for an extended period to avoid battery leakage which can cause malfunctions.

VIEWFINDER INDICATIONS

Focus mode

▶	Camera is focused beyond subject
■	Focus is correct
◀	Camera is focused in front of subject
No indication . .	Auto-focus is operating

White balance mode setting

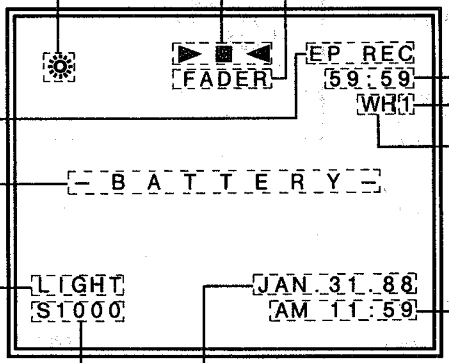
☼	Daylight.
▦	Fluorescent lighting.
✲	Halogen or tungsten lighting.
No indication . . .	Auto white balance is operating

Fading mode

FADER	Fade function is engaged
–FADER–.	Fading is being performed
No indication . .	Fade function is not engaged

Elapsed Time Indicator
Will read 1:00:00 after one hour of recording.

Lithium battery warning
▶E . . . Lithium battery is exausted, or not yet installed.



Title Page indications

1 . . .	First page
2 . . .	Second page
3 . . .	Third page
4 . . .	Fourth page

Title Color indications

BK. . . .	Black
WH . . .	White
YL. . . .	Yellow
CY. . . .	Cyan blue
GR . . .	Green
MG . . .	Magenta
RD . . .	Red
BL	Blue

Date indications

S1000	1/1000 shutter mode is engaged
S500	1/500 shutter mode is engaged
S250	1/250 shutter mode is engaged
No indication	1/60 (standard) shutter mode is engaged

–LIGHT–. . . . . Low-light warning

–BATTERY–. . . . . . Battery warning

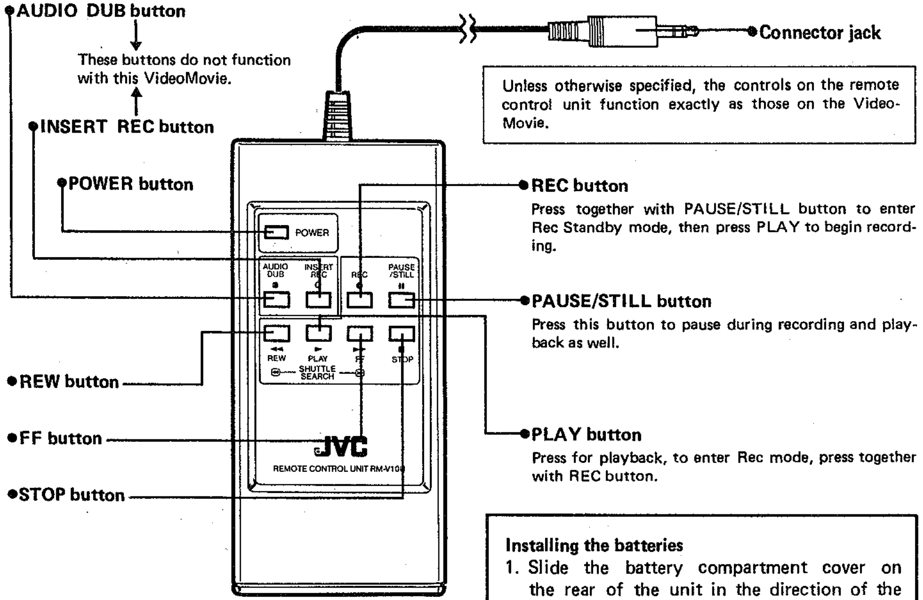
Time indications
12 hour indications with AM or PM
—. — . — . . . Auto Date Rec is engaged

Operation mode

REC.	Recording is being performed in SP mode
EP REC	Recording is being performed in EP mode
—.	Rehearsal or Recording Standby in SP mode is engaged
EP —	Rehearsal or REC. Standby in EP mode is engaged
–REC-or-EP REC–. .	Tape end warning (blinking will begin a few minutes before tape ends)
No indication	Stop or Play mode is engaged

USING THE REMOTE CONTROL UNIT (optional)

The remote control unit RM-V10U (optional) permits VCR functions to be controlled from a distance.


●AUDIO DUB button
These buttons do not function with this VideoMovie.
●INSERT REC button
●POWER button
●REW button
●FF button
●STOP button
●Connector jack
POWER
AUDIO DUB
INSERT REC
REC
PAUSE /STILL
REW
PLAY
FF
STOP
SHUTTLE SEARCH
JVC
REMOTE CONTROL UNIT RM-V10U

Unless otherwise specified, the controls on the remote control unit function exactly as those on the VideoMovie.

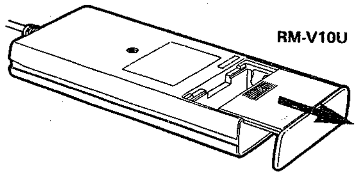
●REC button
Press together with PAUSE/STILL button to enter Rec Standby mode, then press PLAY to begin recording.

●PAUSE/STILL button
Press this button to pause during recording and playback as well.

●PLAY button
Press for playback, to enter Rec mode, press together with REC button.

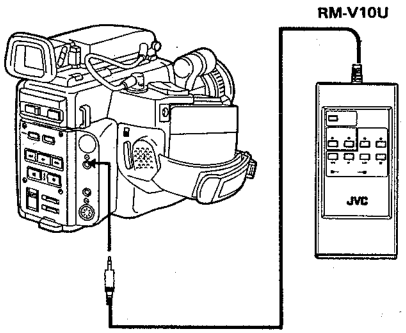
Installing the batteries

1. Slide the battery compartment cover on the rear of the unit in the direction of the arrow.



2. Insert 2 "AA"-size batteries (provided) in the correct directions into the battery compartment.
3. Replace the cover.

Connecting the remote control



- Plug the remote control cable of the remote control unit into the remote connector on the VideoMovie.

Precautions

- Avoid violent shocks, especially take care not to drop the unit.
- Take care not to allow liquid to spill into the unit.
- Do not place heavy objects on the unit.
- Avoid leaving the unit in places subject to direct sunlight or extremely high temperatures.

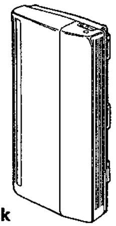
SYSTEMS FLEXIBILITY

For maximum enjoyment, make the most of the provided or optional accessories depending on the situation.

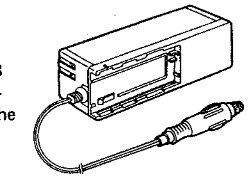
● Regular battery pack
BN-V5GU
☞ Page 13

● High-capacity battery pack
BN-V6GU
☞ Page 13

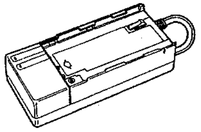
● Super High-capacity battery pack
BN-V7GU
☞ Page 13



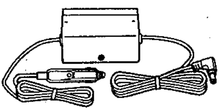
● Car battery charger
BH-V5U
☞ Pages 13 and 33
Use to charge the battery pack, or power the GR-40U using a car battery.



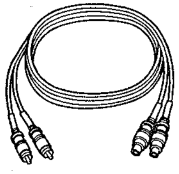
● AC power adapter/battery charger AA-V5U
☞ Pages 13 and 33
Use to power the GR-40U with household AC current or charge the battery pack.



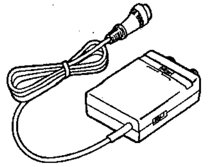
● Car battery cord AP-P1U
☞ Page 13
For power supply from a car battery.



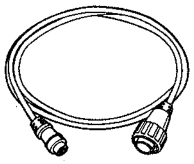
● A/V extension cable
VC-P1U
Use to extend the A/V cable.



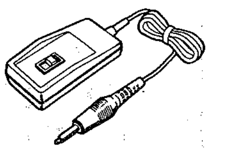
● RF unit RF-V3U
☞ Pages 29 and 30
Use to connect the GR-40U to a regular TV receiver for playback.



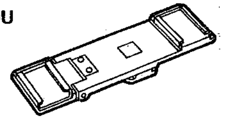
● Conversion cable
VC-V810U
☞ Page 32
For connecting the GR-40U to a VCR with a 10-pin camera connector.



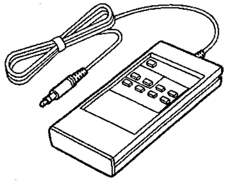
● Remote control unit
RM-P1U
☞ Page 40
Controls recording start/stop from a distance.



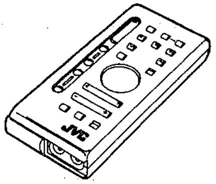
● Shoe adapter CU-V410U
☞ Page 39
Use to attach microphone, character generator etc.



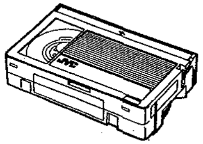
● Remote control unit
RM-V10U
☞ Page 36
Controls VideoMovie's VCR functions from a distance.



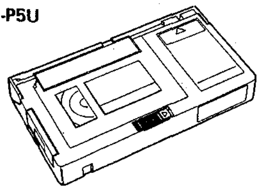
● Character generator
CG-P50U/CG-V60U
☞ Page 39
Allows superimposition of titles, dates and lap time during recording.



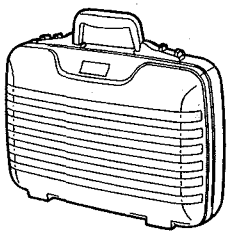
- **Compact video cassette TC-20**
  ☞ **Page 5**
  Allows 20 minutes of recording and playback in SP mode, and 60 minutes of recording and playback in EP mode.



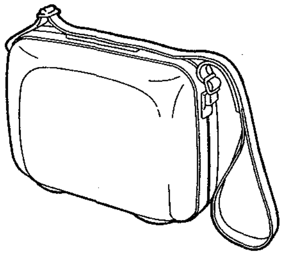
- **Cassette adapter C-P5U**
  ☞ **Page 34**
  Enables the TC-20 compact video cassette to be used with regular VHS machines.



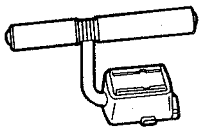
- **Carrying case CB-V32U**
  Use to carry the GR-40U together with accessories.



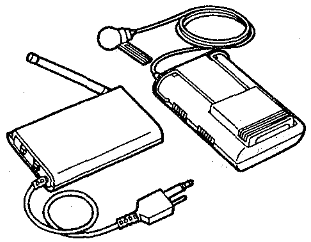
- **Carrying bag CB-V22U**
  Use to carry the GR-40U together with basic accessories.



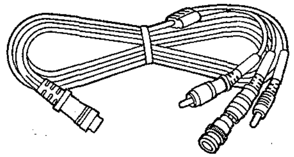
- **Carrying handle VU-V130U**
  Use to carry GR-40U.



- **Wireless microphone unit WM-V1U**
  Allows remote sound recording, for expanded movie-making flexibility.

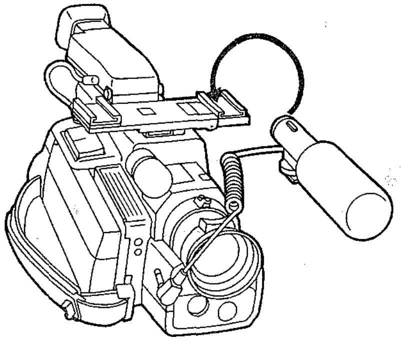


- **AV output cable VC-V826U**
  Use to connect the GR-40U to television set equipped with audio/video input connectors for playback, or to a second video recorder for dubbing.

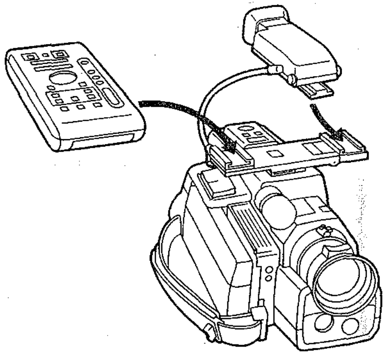


SHOE ADAPTER (optional)/ CARRYING HANDLE (optional)

Attaching external microphone using shoe adapter.



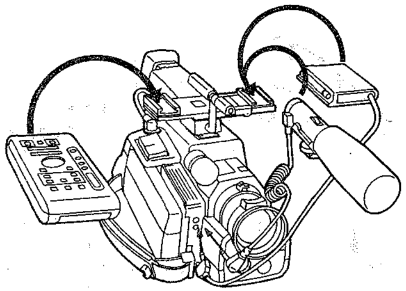
Attaching character generator using shoe adapter.



To attach external microphone or character generator.

CAUTION
- Do not attach a video light, its heat could cause malfunctioning of the GR-40U.

Attaching character generator and external microphone using shoe adapter and carrying handle.

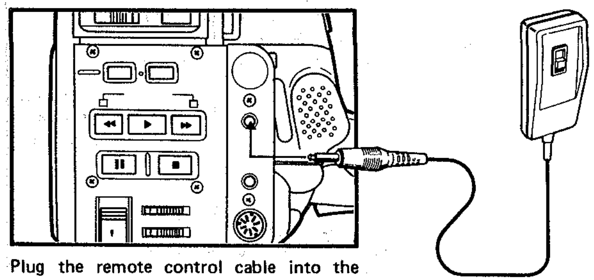


Notes:
- Do not adjust the viewfinder angle while using shoe adapter.
- Keep carrying handle in up position while attaching accessories.
- Run the microphone cord behind the shoe adapter.

REMOTE CONTROL UNIT RM-P1U (optional)

The remote control unit RM-P1U (optional) permits recording start/stop to be controlled from a distance.

1



Plug the remote control cable into the REMOTE connector.

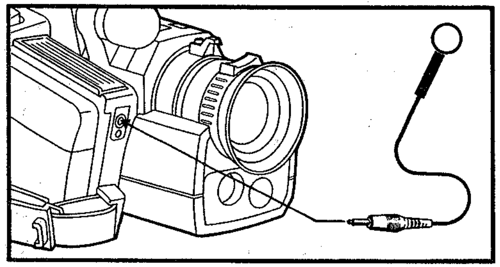
2 Press the standby button to engage the Recording Standby mode.

3 To start recording, set the remote control's switch to REC; to stop temporarily, set it to PAUSE.

Note:
Fader will not function when remote control unit is connected.

EXTERNAL MICROPHONE

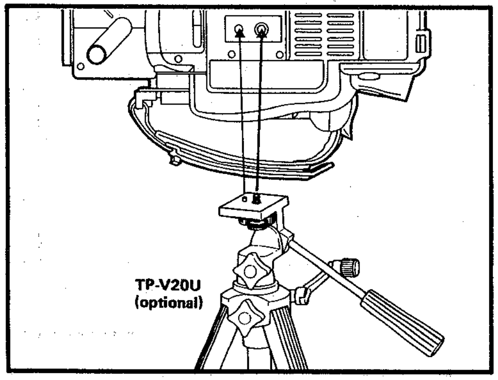
To use another microphone, do the following:



Plug the external microphone's cord into the microphone jack.

- When using the optional wireless microphone unit, plug the cable of receiver unit into the microphone jack.

TRIPOD MOUNTING



Align the screw and camera direction stud of the tripod with the camera's tripod mounting socket and stud hole, and firmly tighten the screw.

SUPPLEMENTAL INFORMATION

What is "color temperature"?
Light is composed of various color components in different proportions. A relationship exists between the temperature of a light source and the color components of the emitted light; as the temperature rises, the color of the light varies from red, orange, yellow, white to blue in that order. "Color temperature" is a value that expresses differences in color among light sources, measured in Kelvin degrees. Bluish light has a higher color temperature than reddish light.

What is "white balance"?
Making the colors look natural on TV is what white balance is all about. Because a camera is not as adaptable as the human eye, if a light source is reddish, white subjects in that light are recorded as reddish. White balance adjustment is performed to compensate for color temperature variations of light so that whites are reproduced as white. Correct white balance makes all other colors correct. The GR-40U can perform automatic white balance adjustment in the full-auto mode. However, if illumination is insufficient, white balance adjustment cannot be performed. To obtain correct colors, therefore, sufficient illumination is essential.

What is "illuminance"?
"Illuminance" (also called 'luminance') is the intensity or brightness of light, expressed in lux or foot-candles (fc). The GR-40U is designed to provide best pictures under the conditions of a 700-lux (67 fc) illuminance, although shooting is possible all the way down to 8 lux (0.8 fc). To obtain good pictures in very bright light, the use of an ND (neutral density) filter is recommended. (See chart on next page.)

How to get good color pictures
The simplest way is to provide sufficient lighting (close to the camera's reference illuminance) and accurately adjust the camera to the color temperature of that lighting. If light sources of different color temperatures are used together, accurate white balance adjustment is very difficult. For example, if natural light is mixed with artificial light, which is likely to occur next to windows, correct colors of the subject are difficult to obtain. It is recommended in such cases that curtains in the room be closed to shut out light from outside. Also, when artificial lighting devices are used, they should all have the same color temperature. For example, it is recommended that incandescent or halogen lamps not be used together with fluorescent lighting.

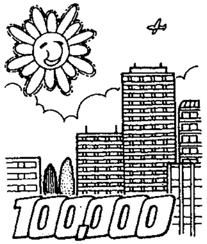
Color temperatures of various artificial lighting

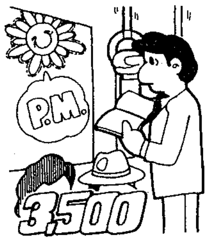
Type of illumination		Color temperature
Tungsten lamp for home use		2800 K
Tungsten lamp for photographic use		3200 K
Quartz-halogen lamp		
Blue lamp for photographic use		5000 K
Fluorescent lamp	Warm white	3500 K
	White	4500 K
	Daylight type	6500 K

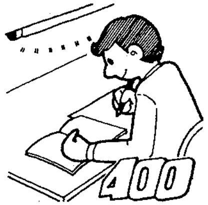
Illuminance chart

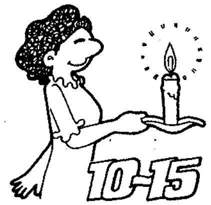
- The values on this chart are approximated to give you a rough reference.

	Unit: Lux (fc)	
ND filter desired	100,000 (9,300)	●Clear sky, mid-day, under sunlight (100,000/9,300)
		●Clear sky (10:00 a.m.) under sunlight (65,000/6,045)
Range for practical use		●Clear sky (3:00 p.m.) under sunlight (35,000/3,255)
		●Cloudy sky (mid-day) under sunlight (32,000/2,976)
		●Cloudy sky (10:00 a.m.) under sunlight (25,000/2,325)
	10,000 (930)	
		●By the window during the afternoon (3,500/324)
	2,000(190)	●Cloudy sky (one hour after sunrise) (2,000/190)
	1,000(94)	●Clear sky (one hour before sunset) (1,000/94)
	600(55)	●Counters at department stores (500 – 700/47 – 66)
Lighting desired	500(47)	●Bowling center (500/47)
		●Office under fluorescent light (400 – 500/37 – 47)
		●Library (400 – 500/37 – 47)
		●Direct light of a flashlight at 1m 1m (3 ft) distance (250/22.7)
	100(9)	●Streetlights at night (150 – 200/13.5 – 18)
	80(7.3)	
	Minimum lighting for an object	
	15(1.4)	●Cigarette lighter (at a distance of 30cm/11.8 in) (15/1.4)
	10(1)	●Candlelight (at a distance of 20cm/7.9 in) (10 – 15/1 – 1.4)









IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first ....

Symptoms	Check points
Power	
No power is supplied	● Is the battery pack correctly installed? ● Is the battery pack charged? ● Is the power supply unit correctly connected? ● Is the POWER switch of the connected AC adapter set to ON?
Recording	
Recording is impossible.	●Check to see if the cassette safety tab is in place. See page 5.
Picture colors greatly differ from actual subject colors.	●If in the manual white balance mode, check the setting of the ✱/▭/☀ button.
No sound is recorded with an external microphone.	● Is the microphone's switch set to ON?
Recording does not start.	● Have you pressed the standby button first?
Playback	
Tape is running, but no playback picture appears.	● Is the TV/VIDEO switch of the RF unit set to VIDEO? ● Is the TV receiver set to channel 3 or 4? ● If A/V connection is used, is the TV's VIDEO/TV switch set to VIDEO?
Noise bars appear in the playback picture.	●Use the TRACKING control to reduce noise bars.
Playback picture is blurred or interrupted while TV programs received are clear.	●Video heads may be dirty or worn out. For head cleaning or replacement, consult the nearest JVC Service Dealer.
Tape transport	
Tape stops during fast forward or rewind.	● Is the "M" indication visible in the tape counter? If so, press the MEMORY button to cancel the memory function.
Rewinding or fast forwarding is impossible.	●Check to see if the tape has already been fully wound on one reel or the other.
Other	
No function is available with more than two mode indicators lit.	● If this should happen when using power supply units other than the battery pack, turn their POWER switch on and off. With a battery pack, replace it with another charged one.
Vertical white lines appear when shooting a very bright object.	●This may occur when the background contrasts very much with the object. This is normal.

The GR-40U is a microcomputer-controlled device. External noise and interference might prevent it from functioning properly. In such cases, first disconnect its power supply unit (battery pack, AC power adapter, etc.); and then reconnect it and proceed as usual from the beginning.

SECTION 1
SERVICE CAUTION AND DISASSEMBLY

1.1 PRECAUTIONS

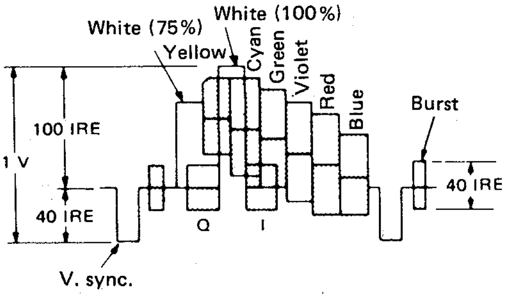
1. Disconnect unit from power before removing or soldering components.
2. When removing a fastener (screw, washer, etc.), be careful not to drop it into the mechanism. If a fastener should be dropped, be sure to retrieve it.
3. When removing a connector, pay enough attention to flexible wires and every wiring not do damage them.
4. Some resistors, shorting jumpers (0 ohm resistance), ceramic capacitors and diodes are chip parts. These chip parts cannot be reused after they are once removed. Refer to Section 1.3.
5. Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available. Especially, when turn the VR of the camera portion without permission, the whole steps to adjust all VRs may be required.
6. When removing and fitting together parts, be careful not to damage or displace other parts. (Be especially careful with the video head ass'y and the tape transport mechanism.)
7. Pay enough attention to the CCD image sensor and optical filter so that they won't be dusty, soiled or damaged. It it is soiled with fingerprints, etc., clean gently with silicon lens tissue or chamois.
8. When fitting and wiring an IC, be careful not to damage circuit patterns.

1.2 TEST EQUIPMENT AND TOOLS REQUIRED FOR ADJUSTMENTS

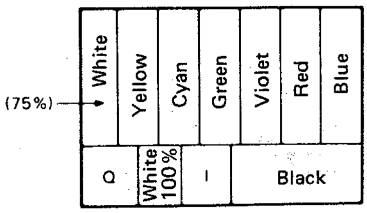
For correct measurement and proper adjustment, prepare the following test equipment and tools besides general-purpose tools.

1.2.1 Required test equipment and tools

1. Color video monitor
2. Blank tape for recording and playback
3. AC power adapter (AA-V5U or equivalent)
4. Oscilloscope (dual-trace type, more than 20 MHz)
5. Frequency counter
6. Audio tester
7. Vectorscope
8. General tools such as precision screwdrivers, tweezers, hex. wrenches, soldering iron, etc.
9. Halogen lamps

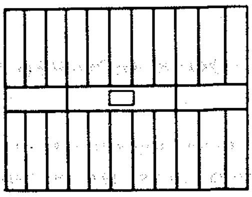
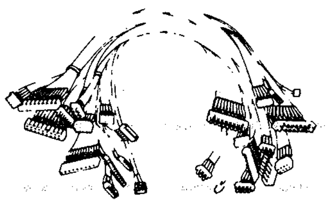
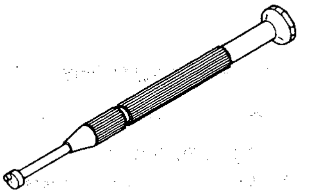
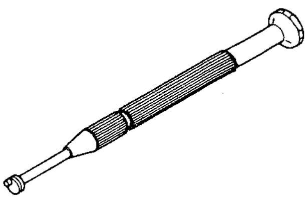
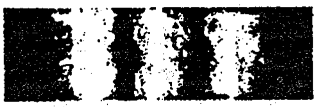
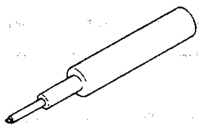
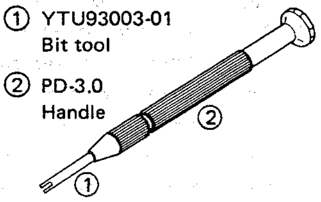
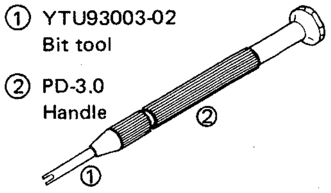
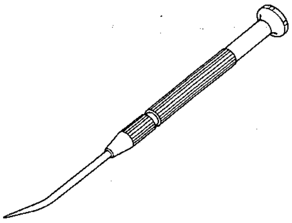
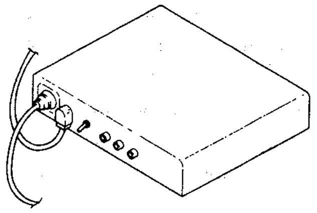
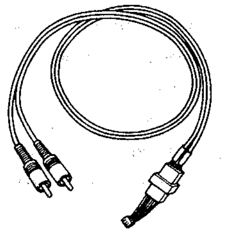
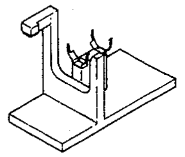
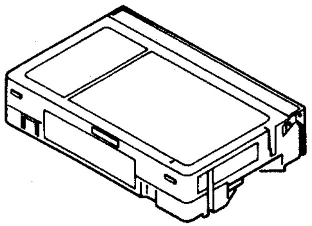
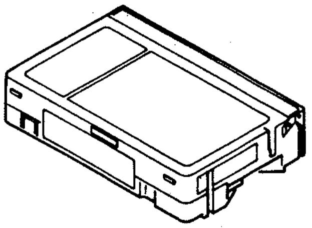
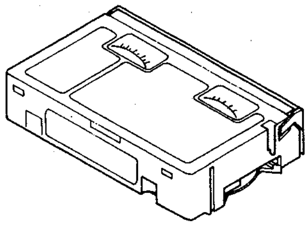
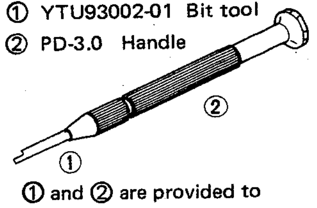
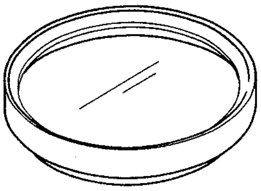
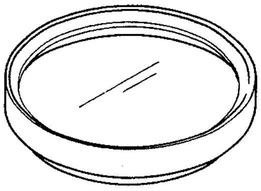


Waveform of color bars signal



Color bars pattern

1.2.2 Special test equipment and tools required for adjustments

Grey scale pattern (GS-2A) Reflection type, 11 steps, $\gamma = 2.2$	Color base pattern (CC-2A) Reflection type, 7-color	Patching cord YTU93014A	Back focus asjustment handle PUJ37186A
			
Auto focus unit Back focus adjustment handle PUJ37186B	Auto focus unit Back focus adjustment chart PUJ93944	Adjustment jig compact VTR YTU93004	Chip parts replacement jig ass'y YTU93003A (incl. ①, ②)
			
Chip parts replacement jig ass'y YTU93003B (incl. ①, ②)	Chip IC replacing tool PTS40844	Y/C separator PUJ25579-2	Y/C separator tool YTU93006
			
Camera adjust stand YTU93010A	Alignment tape (MH-CL)	Check tape (EP mode) (CH-C1L)	Cassette torque meter PUJ50431-2
			
A/CTL head position tool ass'y YTU93002A (incl. ① & ②)	Color temperature conversion filter (PUJ53340A-C2,C4,C8,W2,W4,W8)	Neutral density filter (PUJ53341A - ND2, ND4, ND8)	Color compensating filter - CC10Y (CC10Y filter made by Kodak)
 ① YTU93002-01 Bit tool ② PD-3.0 Handle ② ① ① and ② are provided to separate orders.			This filter is CC10Y in Kodak.

1.3 REPLACEMENT OF CHIP PARTS

For replacing chip parts, proceed it as follows.
Use a well insulated fine-tipped soldering iron (approx. 17 W, 130°C ~ 260°C in temp.). It is recommended to use a soldering iron with solder absorber (55 W approx.) for convenience.

1. Soldering cautions:
   1) Do not apply heat for more than 3 seconds.
   2) Avoid using a rubbing stroke when soldering.
   3) Discard removed chips; do not reuse them.
   4) Supplementary cementing is not required.
   5) Use care not to scratch or otherwise damage the chips.

2. Soldering conditions:
   1) Resistors, capacitors, etc.

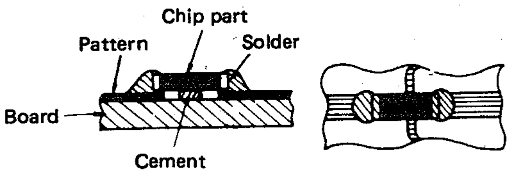

Chip part
Pattern
Solder
Board
Cement

Fig. 1-3-1

   2) Transistors, diodes, etc.

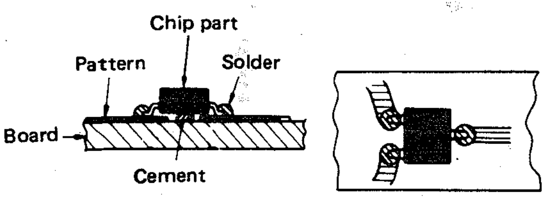

Chip part
Pattern
Solder
Board
Cement

Fig. 1-3-2

3. Removal (resistors, capacitors, etc.):
   1) Grasp the part with repair jig and melt the solder at one side.

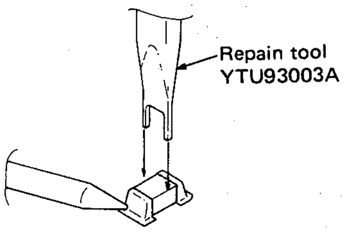

Repain tool
YTU93003A

Fig. 1-3-3

   2) Melt the solder at the other side and remove the part with a twisting motion.

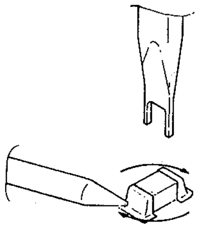


Fig. 1-3-4

4. Removal (transistors, diodes, etc.):
   1) Melt the solder of one lead.

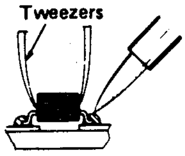


Fig. 1-3-4

   2) Lift the side of that lead upward.

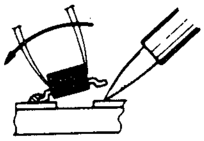


Fig. 1-3-5

   3) Simultaneously heat solder of the two remaining leads and lift part to remove.

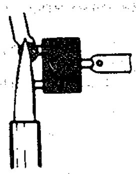


Fig. 1-3-6

5. Preheating (except for semiconductors):
   Immediately before installing new resistors or capacitors, use a blower type hair dryer and preheat the part for about two minutes at approximately 150°C.

6. Replacement:
   1) Presolder the contact points of the circuit pattern.

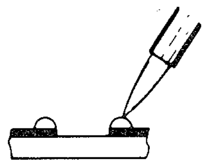


Fig. 1-3-7

   2) Press the part downward with repair jig and apply the soldering pencil as indicated in the figure.

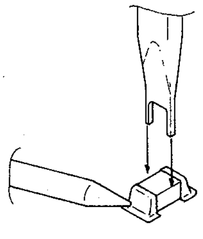


Fig. 1-3-8

1.4 REMOVING OF FLAT ICs

1. For removing solder chips from IC's pins, use a solder remover or a wiry solder absorber.
2. Moving the chip IC replacing jig around tips of the IC, heat tips and leads for removing the IC.
3. Do not reuse the removed IC and discard it.

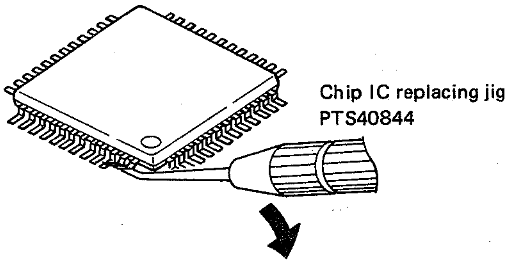

Chip IC replacing jig
PTS40844

Fig. 1-4-1

1.5 CAMERA SECTION DISASSEMBLY

1.5.1 Upper case, side case and front panel

1. Remove two screws Ⓐ and remove VF shoe cover.
2. Remove a screw Ⓑ securing the side panel, and screws Ⓒ and Ⓓ .

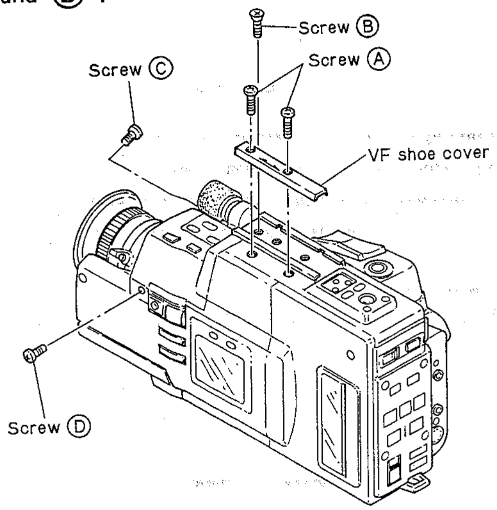

Screw Ⓑ
Screw Ⓐ
Screw Ⓒ
VF shoe cover
Screw Ⓓ

Fig. 1-5-1 Upper/Side cases removal-1

3. Remove each screw Ⓐ , Ⓑ , Ⓒ and two screws Ⓓ .

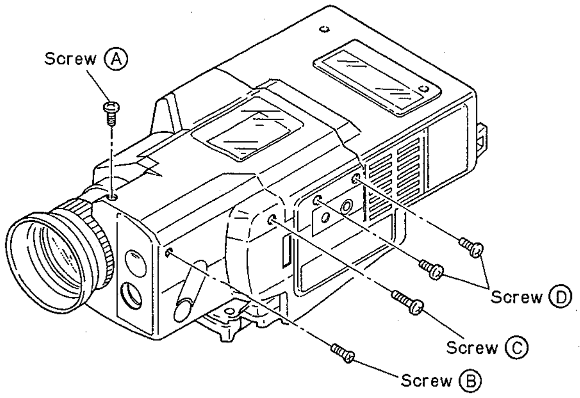

Screw Ⓐ
Screw Ⓓ
Screw Ⓒ
Screw Ⓑ

Fig. 1-5-2 Upper/Side cases removal-2

4. Remove a screw Ⓐ and Ⓑ , and remove the front panel.

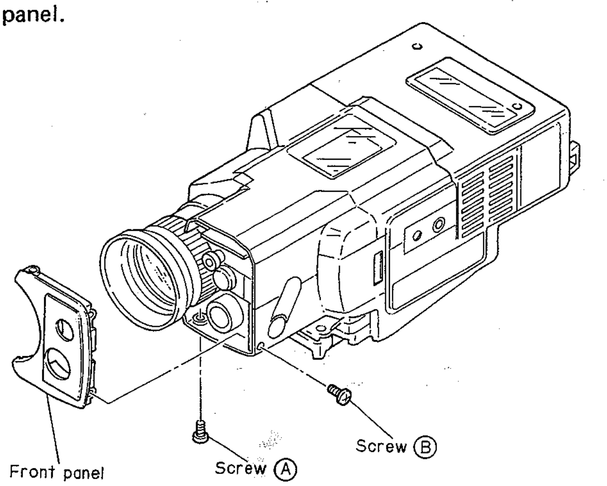

Front panel
Screw Ⓐ
Screw Ⓑ

Fig. 1-5-3 Front panel removal

5. Remove the upper case with paying a careful attention to the flexible wires as they are formed in soft films.
6. Remove the side case with paying enough attention to the connector wires as they are formed in fine cables.

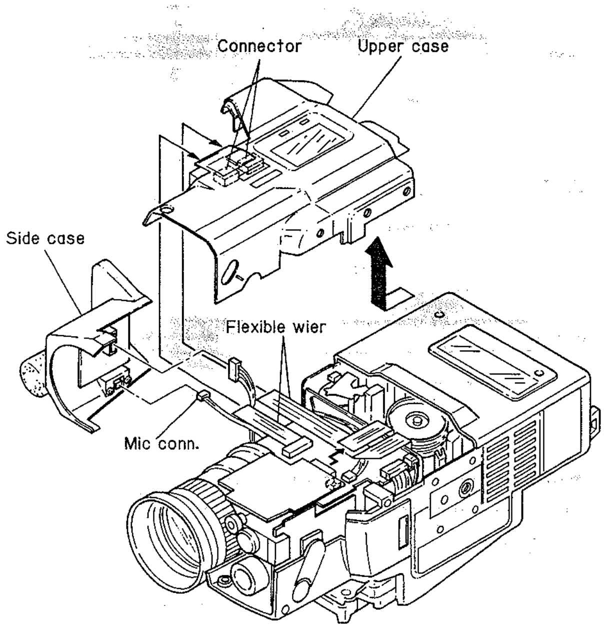

Connector
Upper case
Side case
Flexible wier
Mic conn.

Fig. 1-5-4 Upper/Side cases removal-3

Note: When operationg the unit without the upper case, use the cassette tape without the front tape cover. Otherwise, the front tape cover touches the upper drum. Without the upper case, each camera mode will be latched to the original modes.

1.5.2 Camera section

1. Remove the upper case, side case and front panel as described on sec. 1.5.1.
2. Remove three screws Ⓐ and a screw Ⓑ securing the camera section to the lower case.

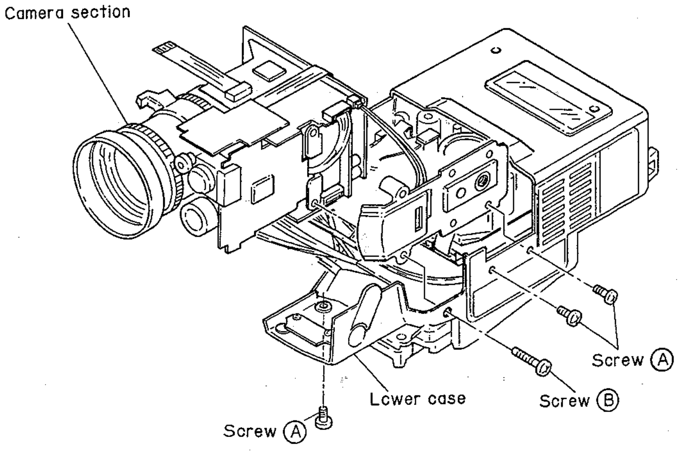

Camera section
Screw Ⓐ
Lower case
Screw Ⓑ
Screw Ⓐ

Fig. 1-5-5 Camera section removal-1

3. Remove the camera section carefully, while disconnecting five connectors on the top section, two connectors on the bottom section and a flexible wire on left side section.

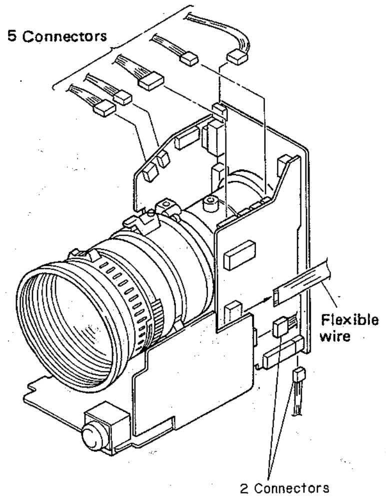

5 Connectors
Flexible wire
2 Connectors

Fig. 1-5-6 Camera section removal-2

1.5.3 Camera operation after separation

1. When operating the camera section after separation, connect only CN304 (4 pin, yellow) to the top portion of the Encoder board and CN101 (3 pin, brown) to the bottom portion of the Encoder board by using the extension cables.

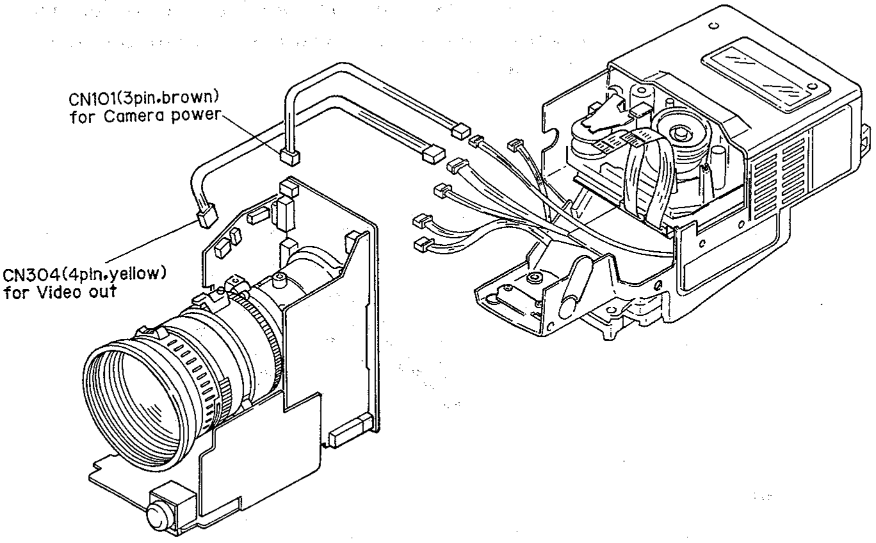

CN101(3pin.brown) for Camera power
CN304(4pin.yellow) for Video out

Fig. 1-5-7 Camera operation

Note: On the above condition, the W. Balance select and the Shutter select buttons are not selected. If neccssary, the LCD module (upper case) must be connected.

1.5.4 Name and location of main components

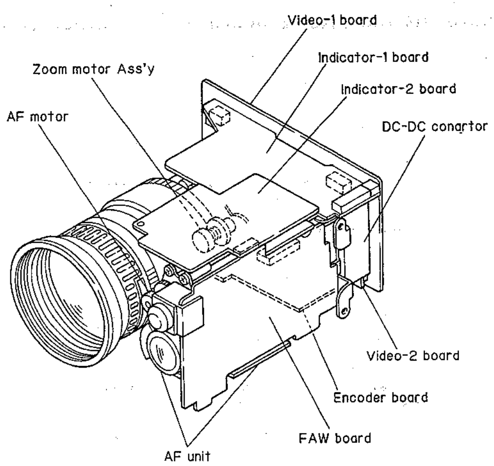

Video-1 board
Indicator-1 board
Zoom motor Ass'y
Indicator-2 board
AF motor
DC-DC conartor
Video-2 board
Encoder board
FAW board
AF unit

Fig. 1-5-8 Name and locations of main component

1.5.5 Removal of each board

1. Indicator-2 board
   Remove the Indicator-2 board with attention connector Ⓐ.

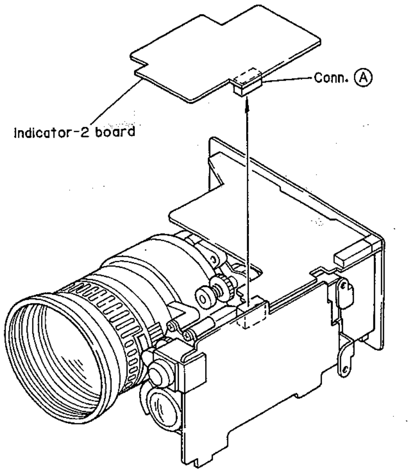

Conn. Ⓐ
Indicator-2 board

Fig. 1-5-9 IND-2 board removal

2. FAW (Full Automatic white Balance) board.
   Remove two screw Ⓐ and remove the FAW board with attention to the connector Ⓑ to the Indicator-1 board.

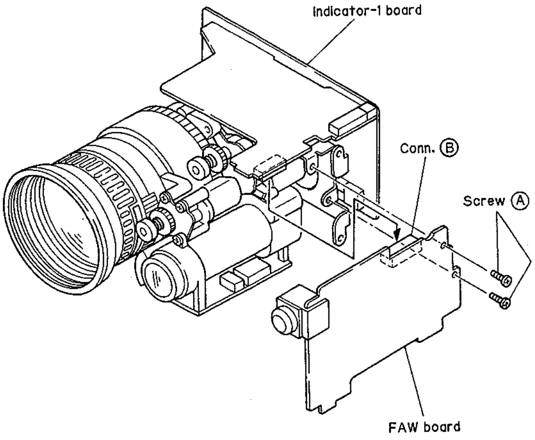

Indicator-1 board
Conn. Ⓑ
Screw Ⓐ
FAW board

Fig. 1-5-10 FAW board removal

All boards except the Video-1 board are combined with connectors each other.

3. Indicator-1 and Encoder boards
   Remove the Indicator-1 and Encoder boards with attention connectors Ⓐ, Ⓑ, Ⓒ and Ⓓ. Then, disconnect connector Ⓔ.

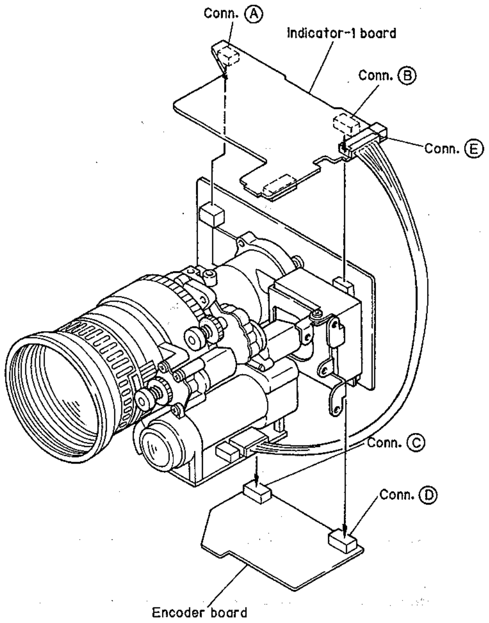

Conn. Ⓐ
Indicator-1 board
Conn. Ⓑ
Conn. Ⓔ
Conn. Ⓒ
Conn. Ⓓ
Encoder board

Fig. 1-5-11 IND-1 and Encoder boards

4. DC-DC convertor and Video-2 board
   Remove two screws Ⓐ securing the DC-DC convertor to the OP bracket and lift the DC-DC convertor. Then disconnect the Video-2 board with attention to connector Ⓑ.

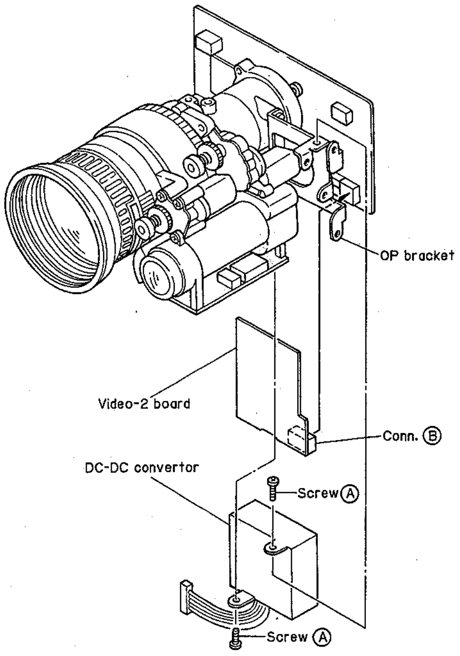

OP bracket
Video-2 board
Conn. Ⓑ
DC-DC convertor
Screw Ⓐ
Screw Ⓐ

Fig. 1-5-12 DC-DC convertor and Video-2 board

5. Video-1 board

Remove two screw Ⓐ and dissolder all pins of the CCD (IC-1) and pull out the Video-1 board carefully.

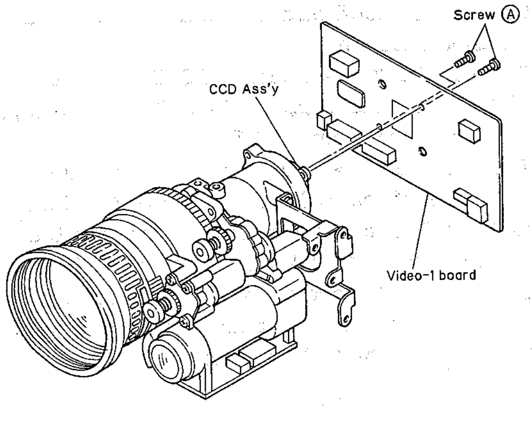

Screw Ⓐ
CCD Ass'y
Video-1 board

Fig. 1-5-13 Video-1 board

Note: When replacing the CCD, make sure to grounding the soldering iron, since the CCD characteristic against electrostatic breakdown is weaker than C-MOS LSIs.

When soldering the CCD to the board, do it as fast as possible, to prevent discoloration of the optical filter.

1.5.6 Main components removal

It is better to remove all boards before replacing the AF unit or each motor.

1. AF (Automatic Focusing) unit

1) Removal

Remove two screws Ⓐ and a screw Ⓑ for the AF unit. Disconnect the 2 pin and 6 pin connectoers from the AF unit.

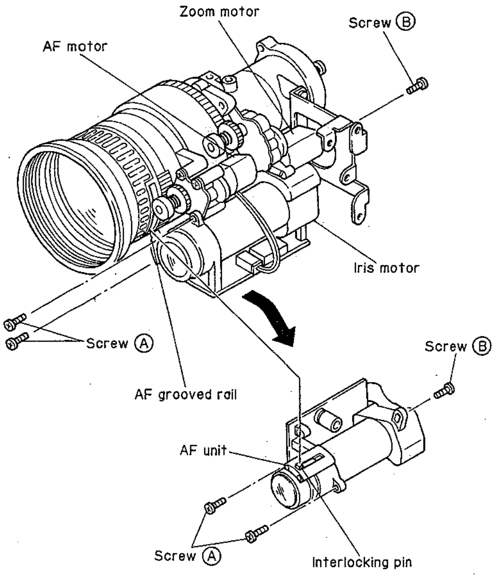

Zoom motor
Screw Ⓑ
AF motor
Iris motor
Screw Ⓐ
Screw Ⓑ
AF grooved rail
AF unit
Screw Ⓐ
Interlocking pin

Fig. 1-5-14 AF unit removal

2) Setting back

Set the interlocking pin of the AF unit into the grooved rail on the focus ring and tighten two screws Ⓐ in front of the AF unit.

Then, tighten a screw Ⓑ for locating it around the center of the ellipse hole of the AF unit.

Note: After replacement of the AF unit, the AF adjustment must be performed. Refer to sec. 3.7.25."Auto focus adjustment".

2. AF motor and zoom motor

1) Removal

Remove two screws Ⓒ for the AF motor ass'y and two screws Ⓓ for the Zoom motor ass'y.

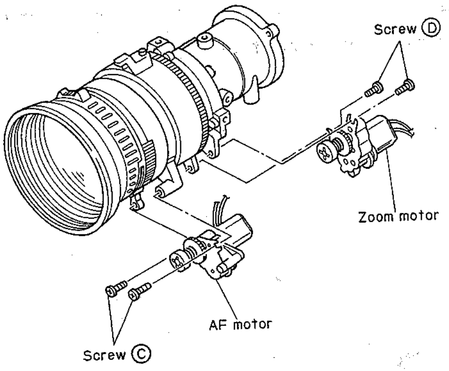

Screw Ⓓ
Zoom motor
AF motor
Screw Ⓒ

Fig. 1-5-15 AF motor and zoom motor

2) Setting back

Allign each gear of the motors to the each ring and tighten screws.

Make sure that when turning the each ring by the hand, each ring and gear rotate easily.

1.5.7 CCD replacement

Notes:

1. Pay enough attention to the transparent glass and optical filter and CCD itself so that it won't be dusty, soiled. If it is soiled with fingerprints, etc., clean gently with silicon lens tissue or chamois.
2. An orange protector seal is applied to the CCD for the service part. When replacing, do not remove it just before assembling it to the optical block.

1. Removal

According to sec. 1.5.5 "Removal of each board", remove the Video-1 board.

1) Remove two screws Ⓐ and remove the image sensor ass'y.
2) Remove three screws Ⓒ and remove the optical LPF holder Ⓗ, optical LPF Ⓓ, spacer rubber Ⓔ, and CCD Ⓖ from imager holder Ⓕ.

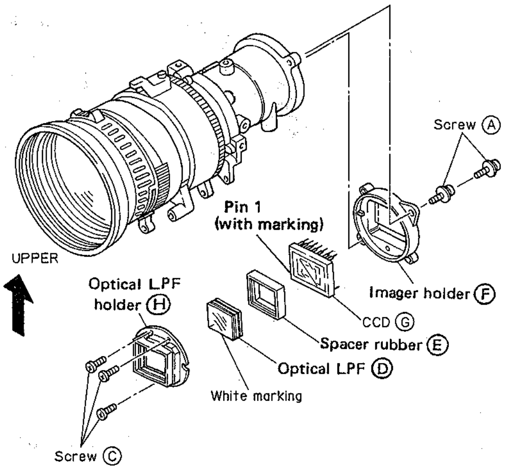


Fig. 1-5-16 CCD replacement

2. Installation

1) Remove the orange protector seal of a new CCD and set it on the imager holder and assemble the spacer rubber, optical filter and the filter holder.
   Make sure to setting the CCD and optical LPF in correct direction.
   The optical LPF should be placed with its white marking facing downwards and to the optical LPF holder.
   The CCD should be placed with its pin 1 which has a marking positioned left down as shown in the figure.
2) Tighten three screws Ⓒ for locating the CCD around the center of the optical LPF holder and for locating pins of the CCD around the center of both holes of the imager holder by viewing from back side.
   Otherwise, vignetting at the image corner may be happened.
3) Fix the imager holder to the optical block with two screws Ⓐ for locating screws around the center of the screw holes of the imager holder.
4) Finally, during E to E mode, confirm absence of vignetting at the image corner with the lens to MACRO position.

3. Adjustment

Perform only section 3.7.24 "Back focus adjustment".

1.6 DECK SECTION DISASSEMBLY

1.6.1 Deck operaiton using Y/C separator

After separating the camera section, the quality of the deck section can be confirmed by using Y/C separator instead of the camera section.

1. Connect the Y/C separator's DC OUT cable to DC IN of the deck and supply 9.6 V DC to the separator's DC IN terminal from AA-V5U.
   Then, connect the red terminal of the attached cable to C OUT of the Y/C separator while the white terminal to Y OUT, and connect some extension cable between the connector of CN4/5 (Y/C in) from the Y.C board and the output connector of the Y/C separator.
   Next, connect the output cable of a signal generator to VIDEO IN of the Y/C separator.

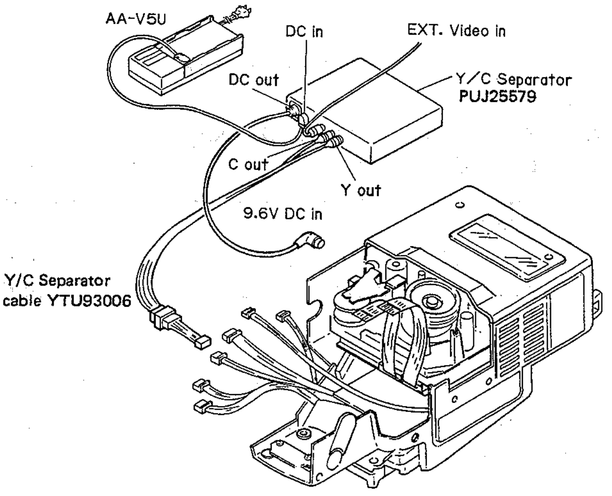


Fig. 1-6-1 Deck operation using Y/C separator

1.6.2 Lower case removal

When diassembling the deck section, at first remove the camera section.

1. Remove two screws Ⓐ and lift the cassette cover in the direction Ⓑ.

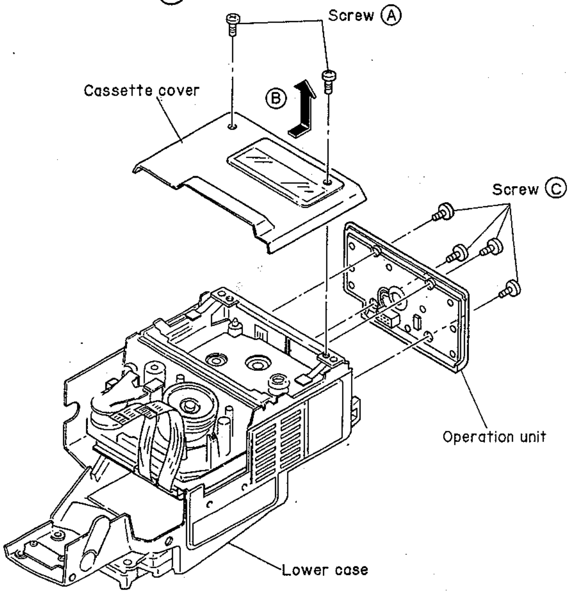


Fig. 1-6-2 Deck section removal-1

2. Remove four screws Ⓒ and remove the operation unit with attention to the connector.

3. Remove two screws Ⓐ for the Jack board ass'y.

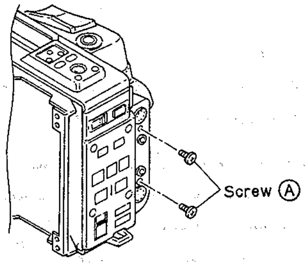


Fig. 1-6-3 Deck section removal-2

4. Take out three screws Ⓐ securing the deck to the lower case and a screw Ⓑ for Y/C board.

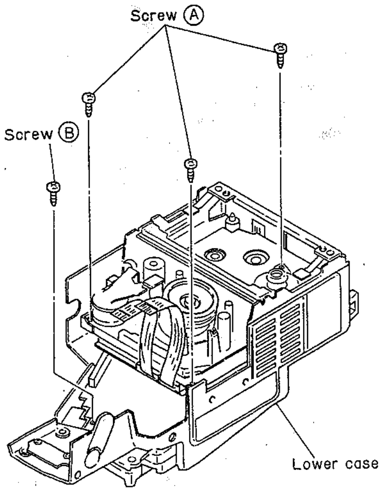

Screw Ⓐ
Screw Ⓑ
Lower case

Fig. 1-6-4 Deck section removal-3

5. Disconnect a connector Ⓐ from the Mic Jack board, and two connectors Ⓑ and Ⓒ from the Main board.

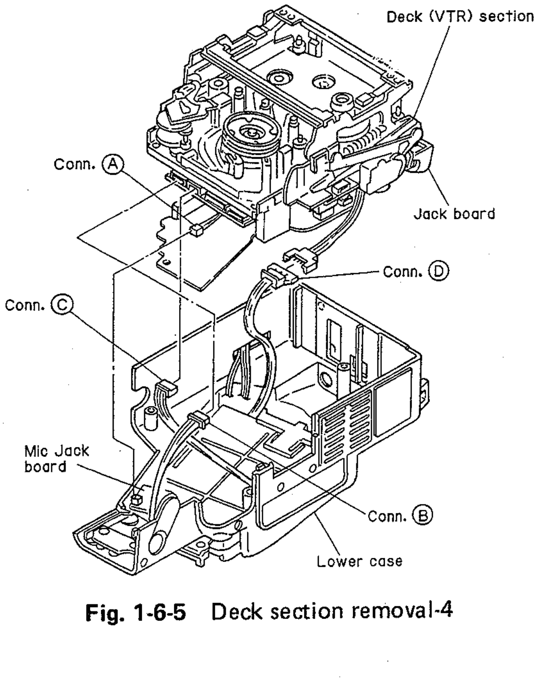

Deck (VTR) section
Conn. Ⓐ
Jack board
Conn. Ⓓ
Conn. Ⓒ
Mic Jack board
Conn. Ⓑ
Lower case

Fig. 1-6-5 Deck section removal-4

6. While widening the lower case, lift the deck section with the Y/C and the Jack boards. Then, disconnect a connector Ⓓ between V/F connector and the Main board.

1.6.3 Removal of each board

1. Y/C and Jack boards
   As the Y/C board is connected with three connectors Ⓐ, Ⓑ and Ⓒ to the main board, the Y/C board with the Jack board can be disengaged by drawing down.

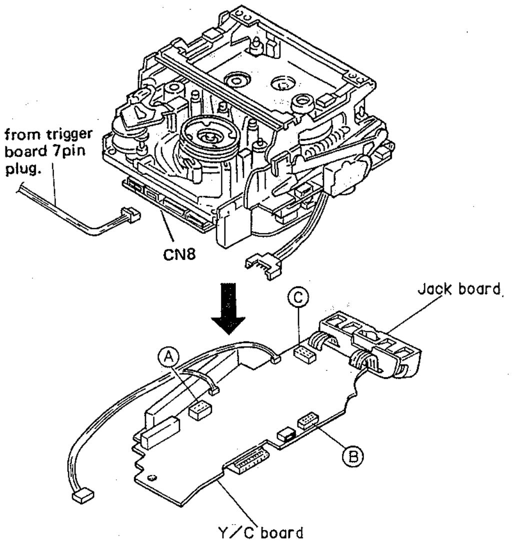

from trigger board 7pin plug.
CN8
Ⓒ
Jack board
Ⓐ
Ⓑ
Y/C board

Fig. 1-6-6 Y/C and Jack boards removal

Notes:

1. Before removal of the Y/C and Jack boards, if Y/C separate signals are supplied to 4 pin yellow plug from the Y/C board (CN4/5) and unreg 9.6 V and etc. are supplied to 7 pin connector (CN8) on the main board from the trigger board engaged to the lower case and the operation unit is connected, the deck can be recorded and played back.
2. After disconnecting the Y/C board, if unreg 9.6 V and etc. are supplied to 7 pin connector (CN8) on the main board from the trigger board and the operation unit is connected, the mechanical functions of the deck can be checked.

2. Main board
Remove a screw Ⓐ.
Disconnect the flexible wire Ⓑ and two connectors Ⓒ and Ⓓ. Then, open the main board while disconnecting plug Ⓔ to the MDA board. When removing the main board completely, disconnect four plugs on the other side.

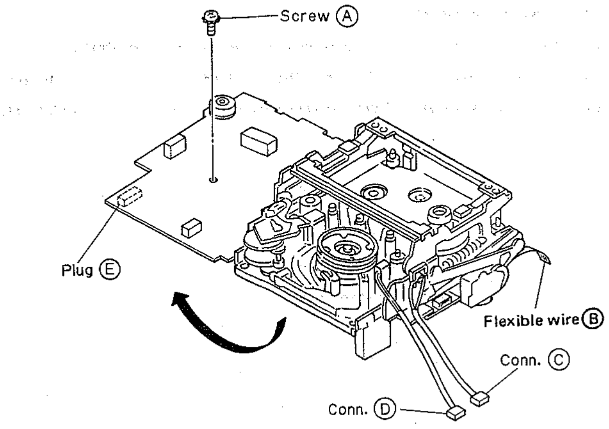

Screw Ⓐ
Plug Ⓔ
Flexible wire Ⓑ
Conn. Ⓒ
Conn. Ⓓ

Fig. 1-6-7 Main board removal

3. Names and locations of other boards

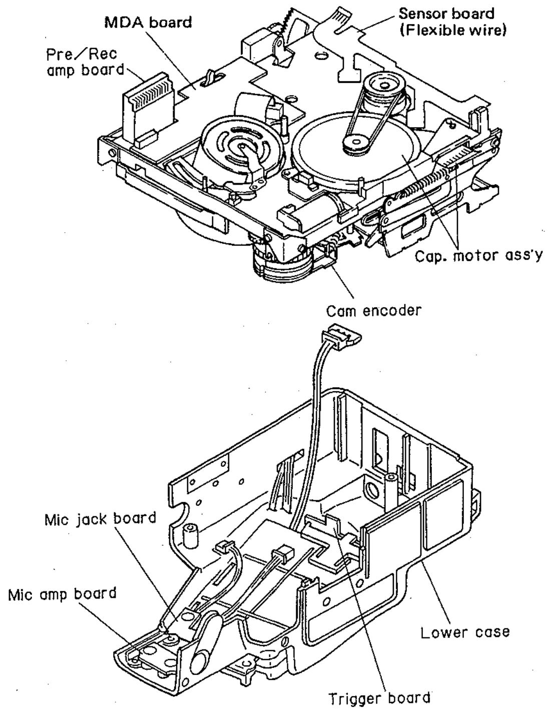

MDA board
Sensor board (Flexible wire)
Pre/Rec amp board
Cap. motor ass'y
Cam encoder
Mic jack board
Mic amp board
Lower case
Trigger board

Fig. 1-6-8 Names and locations of small boards

1.6.4 Main components removal

1. Cassette housing
Pull the white plastic lever Ⓐ (for the cassette sensor) of the cassette housing or the eject lever Ⓑ on the shassis bottom to the front side for raising it, even if the tape is being inserted.

Note: When the eject function is not operated, do the above matter to raise the cassette housing.

Remove two screws Ⓒ and remove pins Ⓓ and Ⓔ from the housing rails of the chassis by spreading the cassette housing in the outside.
Then, remove both plastic hooks Ⓕ and Ⓖ with attention to the REC safety switch not to damage them.

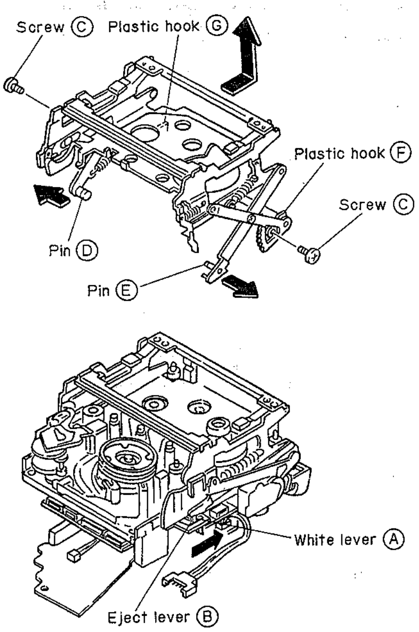

Screw Ⓒ
Plastic hook Ⓖ
Plastic hook Ⓕ
Screw Ⓒ
Pin Ⓓ
Pin Ⓔ
White lever Ⓐ
Eject lever Ⓑ

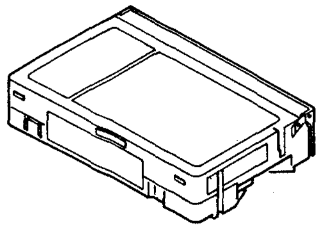
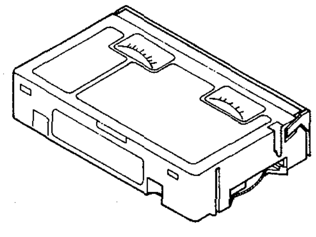
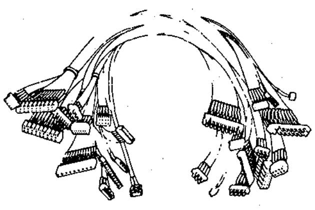
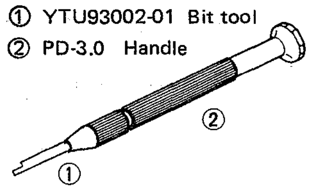
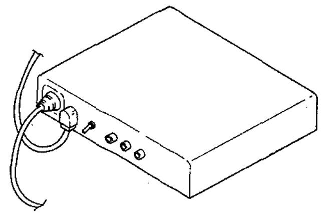
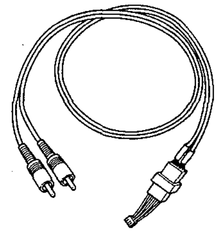
Fig. 1-6-9 Cassette housing removal

SECTION 2
MECHANICAL ADJUSTMENT

2.1 TOOLS AND TEST EQUIPMENT REQUIRED FOR ADJUSTMENT

1. AC power adapter (AA-V5U, etc.)
2. Oscilloscope (dual-trace type, for more than 20 MHz)
3. VHS-C cassette tape
4. Color video monitor
5. Video signal generator (the camera can be used for it)
6. Precision screwdrivers, tweezers, hex. wrenches, and other general tools

2.2 SPECIAL TOOLS AND EQUIPMENT FOR ADJUSTMENT

Alignment tape MH-C1	Cassette torque meter PUJ50431-2	Patching cords YTU93014A	A/CTL head position tool ass'y YTU93002A (incl. ① & ②)
			 ① and ② are provided to separate orders.
Y/C separator PUJ25579	Y/C separator cable YTU93006		
			

Note:
- Although adjustments of this section can be performed without the patching cords, it is recommended to prepare the following two for convenience.
  1. YTU94001B : for connection of the OPERATION unit
  2. YTU94007A : for connection of the TRIGGER board
- Another similar tool can serve as the A/C head position tool.
- If the camera is used for a video signal generator, the Y/C separator and Y/C separator cable are unnecessary.

2.3 CAUTIONS

1. When a VHS-C cassette is set in the cassette housing, remove the cassette door beforehand since it touches the drum.
2. If the test equipment is connected to a chip TP for measurement and observation, make sure to use an IC clip, etc. to make it free from any stress.
3. In the case mechanism operations are checked up without a VHS-C cassette, perform it as follows.
   - Apply black tape to the end sensor to shut off light.
   - Set the CASSETTE LOCK switch to "ON".
   - Set the mechanism mode properly for the test by the OPERATION button.
   - Perform the test turning the reel disk or gear of the tape supply side by fingers.

2.4 REPLACEMENT OF UPPER DRUM

1. Unsolder all soldered points (16 points) on the upper drum board, and remove two screws (see Fig. 2-4-1).
2. Remove the upper drum board together with the upper drum.
   If it is difficult to remove the upper drum, set the tool provided with a new upper drum as shown in Fig. 2-4-2 to do it easily.
   Before installing new one, insert a soldering iron (50 W) into the hole of the upper drum and heat it for 3–5 minutes to expand the hole. At this time, pay careful attention to the drum's temperature not to exceed 85°C. As the upper drum of this model is made more precisely than that of any conventional model, there is little gap between the drum's hole and the shaft. So, it is recommended to heat the drum nearly to 50°C. If the screws of the tool provided with a new upper drum is not long enough to remove the upper drum to be replaced, exchange the screws for longer ones.
3. With careful attention not to touch a new upper drum's head or damage the drum, replace the upper drum.
4. When installing a new upper drum, set its position for the tapped holes for the two screws Ⓐ and fix it by tightening the screws.
5. After completion of the replacement, check up and adjust FM waveforms (refer to section 2.6.1).

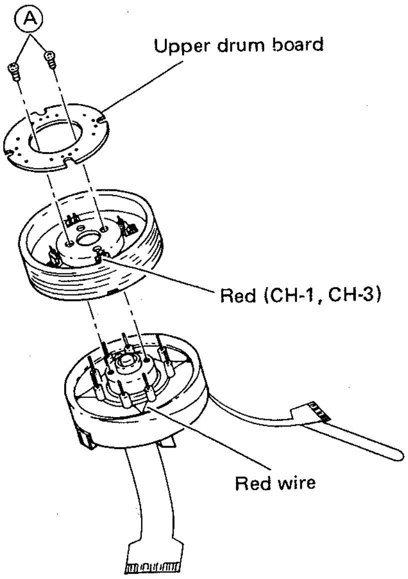


Fig. 2-4-1 Upper drum assembly

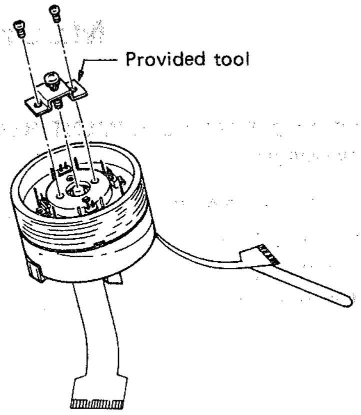
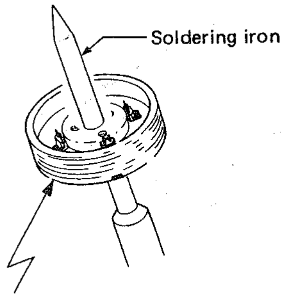
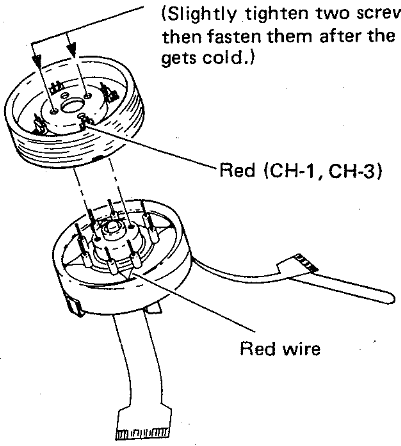


Fig. 2-4-2 How to set the provided tool



Make sure not to heat the upper drum itself over 85°C.

Fig. 2-4-3



Fitting holes of the upper and lower drums each other, settle a new upper drum as soon as possible.
(Slightly tighten two screws once, and then fasten them after the upper drum gets cold.)

Fig. 2-4-4

2.5 CHECK AND ADJUSTMENT

Before replacing or removing the following parts, make sure to confirm their positions particularly in relation to others for a reference of re-assembling.

2.5.1 Phase adjustment of cam gears and loading rings

When removing or replacing take-up and supply loading rings, make sure to set the loading ring's position for the Stop mode beforehand (see Fig. 2-5-1).

1. Remove the worm gear (inside the loading motor bracket assembly) in advance, turn the take-up/supply loading ring in the unloading direction.
2. Adjust positions of the take-up and supply loading rings so that their hole and V-shaped notch are located in a straight line to the triangle mark of the main deck (viewed from the top, see Fig. 2-5-1).

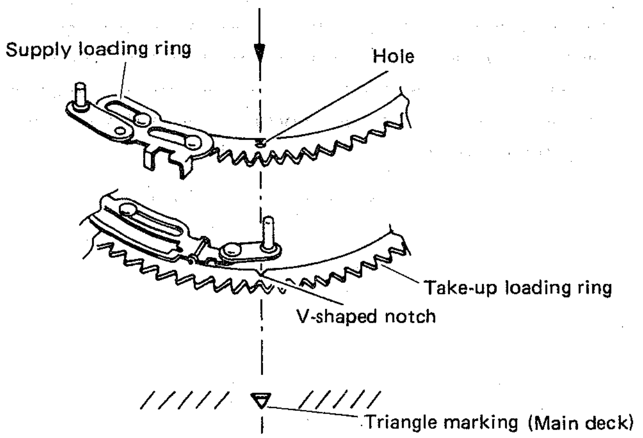

Supply loading ring
Hole
Take-up loading ring
V-shaped notch
Triangle marking (Main deck)

Fig. 2-5-1 Phase adjustment of loading rings

2.5.2 Middle pole

1. Slightly move the middle pole in the direction of Ⓐ.
2. Adjust the set position of the arm gear correctly so that the arm gear's shaft Ⓓ, locating hole Ⓒ and axis of the middle pole Ⓔ are straightly aligned one another.

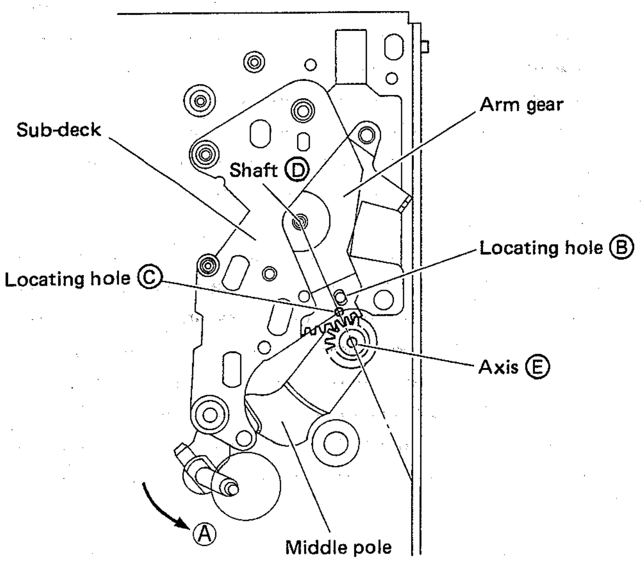

Sub-deck
Shaft Ⓓ
Arm gear
Locating hole Ⓑ
Locating hole Ⓒ
Axis Ⓔ
Ⓐ
Middle pole

Fig. 2-5-2 Phase adjustment of middle pole

2.5.3 Control cam

1. To enter the mechanism into the Stop mode, position the control cam gear's marking and the center of the terminal gear's axis as shown in Fig. 2-5-3.

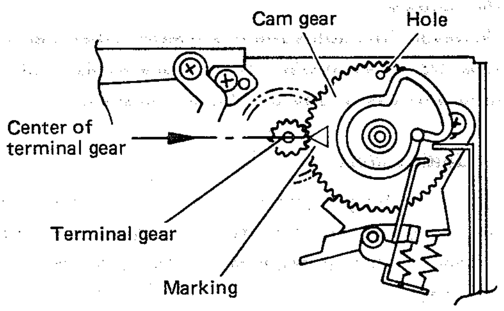

Cam gear
Hole
Center of terminal gear
Terminal gear
Marking

Fig. 2-5-3 Phase adjustment of control cam

2.5.4 Mode control switch

1. In the Stop mode, the mode control switch is set in the phase shown in Fig. 2-5-4.

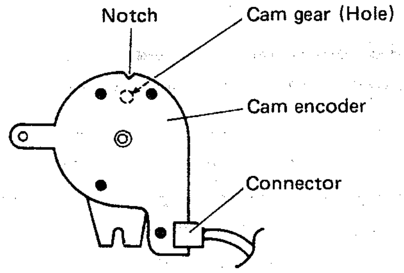

Notch
Cam gear (Hole)
Cam encoder
Connector

Fig. 2-5-4 Phase adjustment of mode control switch

2.5.5 Checkup of tension pole position and back tension adjustment

Load the mechanism with a cassette and set it for the playback mode. Then, confirm that centers of the tension pole assembly and the impedance roller are in a straight line to the front of the deck (in the direction of the cassette housing). See Fig. 2-5-5.

Next, set the cassette torque meter (PUJ50431-2) and adjust the screw ① so that the meter reads 15–20 g-cm for the back tension.

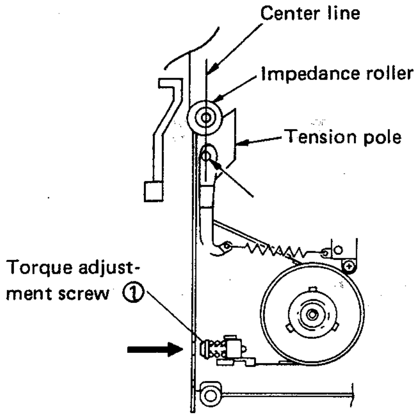

Center line
Impedance roller
Tension pole
Torque adjustment screw ①

Fig. 2-5-5 Phase adjustment of tension pole

2.6 CHECK AND ADJUSTMENT OF TAPE TRANSPORT SYSTEM

Note: Generally, the tape transport system does not require any adjustment since it has been precisely adjusted at the factory.
However, this adjustment is needed when parts of the tape transport system were replaced as a result of a long-time use or any trouble in the system.

2.6.1 Guide rollers

1. Guide roller height adjustment is required in order to attain FM waveform linearity at the drum input and output sides in the procedure of the interchangeability adjustment.
2. With a cassette tape (except alignment tapes) running, adjust the height of the supply guide roller with a hex. wrench (1.5 mm) so that the tape runs smoothly along the drum lead at the drum entrance side.
3. For the drum exit side, adjust the take-up guide roller height in the same manner as above.

2.6.2 Audio/control (A/CTL) head
(located by the take-up guide pole)

Note: Adjustment of audio/control head is given much weight in the interchangeability adjustment.

1. After completion of the take-up guide roller adjustment, adjust the A/CTL head's inclination so that the tape runs smoothly along the flange of the take-up guide pole.
This adjustment can be performed by turning the screw ② with a precision screwdriver (cross-head,⊕).
See Fig. 2-6-1.
2. By way of an example of the adjustment, turn the screw ② counterclockwise to wrinkle the running tape around the bottom of the take-up guide pole, and then slowly turn the screw clockwise until no wrinkles are not found in the tape.
3. Next, proceed to adjustments of its azimuth and height.

Note: There is no place for adjustment of the take-up guide pole since it has been precisely adjusted as a reference height of the take-up side (tape outlet side).

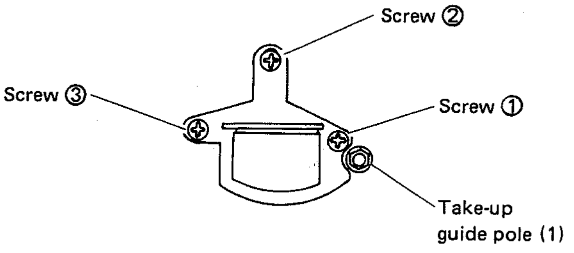


Fig. 2-6-1 A/CTL head adjustment

2.7 CHECK AND ADJUSTMENT OF INTERCHANGEABILITY

Note: Before using an expensive alignment tape for the interchangeability adjustment, it is recommended to use an ordinary cassette tape to check up no trouble in tape running. If there is any trouble in the tape running, find the cause and remedy it first.

2.7.1 FM waveform

For checking and adjusting FM waveforms, use the alignment tape MH-C1 and stairstep signals.

1. Play back the alignment tape MH-C1 and adjust the tracking control to obtain the maximum FM waveform. Connect the oscilloscope's probe to TP7 of [02] Y/C board to observe waveform of PB FM signal.
At this time, confirm that the waveform is the standard video FM waveform as shown in Fig. 2-7-1, namely, [a] (maximum output), [b] (minimum output at the center of waveform), [c] (minimum output at the drum intake — input portion), and [d] (minimum output at the drum outlet — output portion) are in the relationship shown below.

$$\frac{b}{a} \geq \frac{3.4}{4} \qquad \frac{c}{a} \geq \frac{2.8}{4} \qquad \frac{d}{a} \geq \frac{2.8}{4}$$

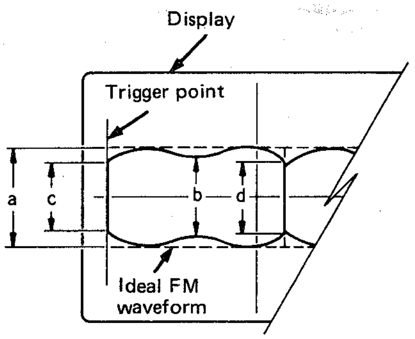


Fig. 2-7-1 FM waveform (standard video FM waveform)

2. If the waveform does not satisfy the standard conditions or it is far from linear (parallel) variation, re-adjustment is needed. If the waveform is far from the parallel shape, it causes a partial level drop owing to a slight tracking error, which may result in noise occurrence.
3. Turn the tracking control to vary the FM waveform from maximum to minimum, and vice versa, and confirm that the FM waveform varies rather parallel at the drum intake (input) side.
If FM waveform irregularly changes, for example, expanded portion becomes narrow or narrowed portion expands, it is because of incorrect height of the supply guide roller (incorrect tape running along the drum lead at the drum intake). Such being the case, adjustment of the supply guide roller height is very important for correct and smooth tape running and to obtain satisfactory FM waveform variation of rather parallel lines. (See Fig. 2-7-2.)

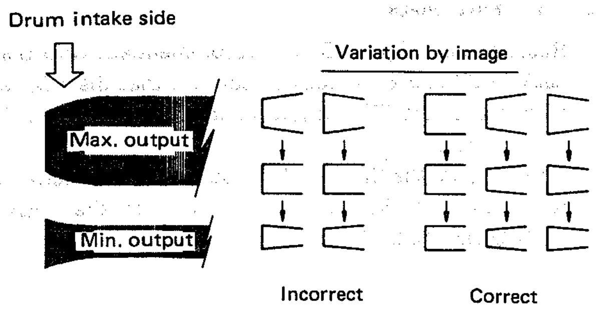


Fig. 2-7-2 FM waveform variation at drum intake

4. In the same manner as above, check up FM waveform variation between maximum and minimum outputs whether they are nearly in parallel lines or not. If not, adjust the take-up guide roller height (tape outlet side). See Fig. 2-7-3.
5. Next, perform fine adjustments of the take-up and supply guide roller heights for entire FM waveform variation between maximum and minimum outputs by the tracking control operation so that every variation shows parallel and linear lines.
6. After completion of the height adjustments for the take-up and supply guide rollers, confirm that there is no wrinkle nor damage in the tape around the impedance roller and take-up guide pole. If such the symptom is found around the supply impedance roller which functions as the lower limiter of the tape, fine adjust the roller's position slightly downwards. This adjustment must be done only for the supply impedance roller.
   On the other hand, if such the symptom is seen around the take-up guide pole, adjustment should be performed not for the take-up guide pole but for the A/CTL head by adjusting its inclination (for correct tape contact) to travel the tape correctly along the flange on the bottom of the guide pole.
   After confirmation of normal tape running, check up entire FM waveform again.

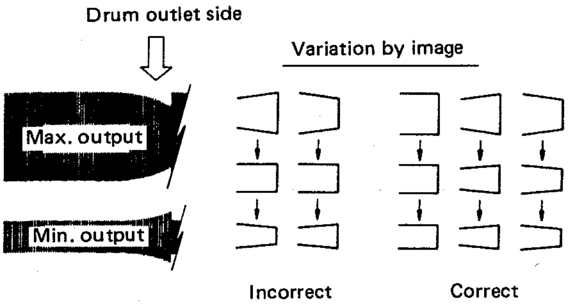


Fig. 2-7-3 FM waveform variation at drum outlet side

2.7.2 A/CTL (audio/control) head adjustment

Incorrect positioning of the A/CTL head causes reduced audio output when a tape is played back by another video deck, deterioration in S/N, and in a severe case, interference in servo stability due to inability to pick up control signals. To observe audio signals connect an oscilloscope to the audio output terminal.

1. Play back the stairstep segment (7 kHz audio signal) of the alignment tape MH-C1.
2. Adjust the A/CTL head height by turning screws Ⓐ, Ⓑ and Ⓒ precisely and evenly.

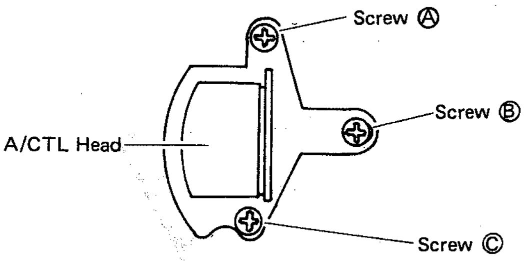


Fig. 2-7-4

3. Turn the screw Ⓐ to obtain the maximum audio output.
4. Turn the screws Ⓐ , Ⓒ and Ⓑ evenly little by little in the same direction to change height of the A/CTL head, and settle it for the maximum audio output.
   output.

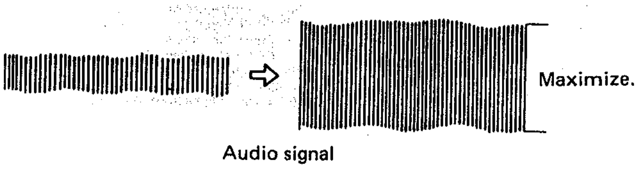


Fig. 2-7-5 A/CTL head adjustment

2.7.3 Control head phase (X value) adjustment

1. Make a shortcircuit between pins 1 and 4 of CN13 of [01] MAIN board, and then play back the stairstep signal of the alignment tape MH-C1.
2. Slightly loosen the screws Ⓓ and Ⓔ of the A/CTL head and insert the tip of the A/CTL head opsition tool into the guide hole and the groove. In this state move the A/CTL head to the full extent in the direction of the capstan side. (See Fig. 2-7-6.)
3. Returning the A/CTL head in the reverse direction, observe the waveform of CH-1 FM signal to find the position where the output becomes of the peak for the first time, and tighten the screws Ⓓ and Ⓔ to fix the A/CTL head.

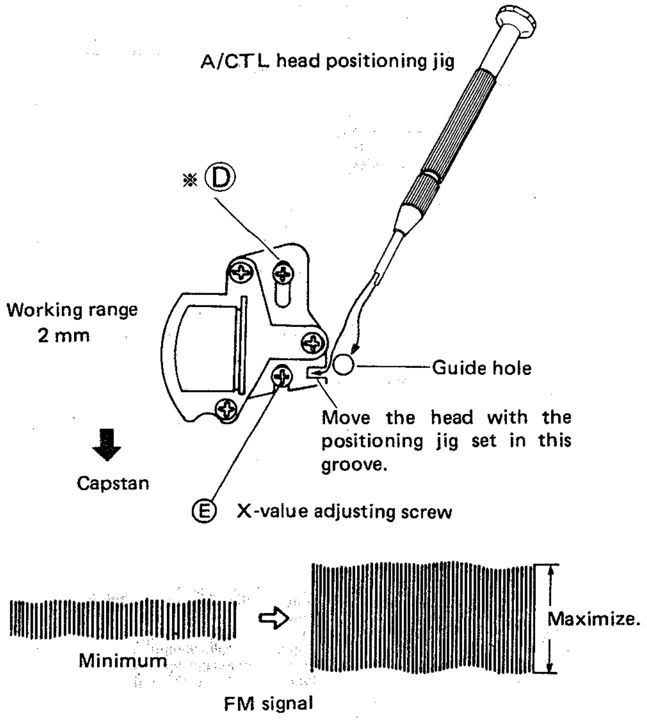

A/CTL head positioning jig
※Ⓓ
Working range
2 mm
Guide hole
Move the head with the positioning jig set in this groove.
Capstan
Ⓔ X-value adjusting screw
Minimum
Maximize.
FM signal

Fig. 2-7-6 X-value adjustment

2.7.4 Final check

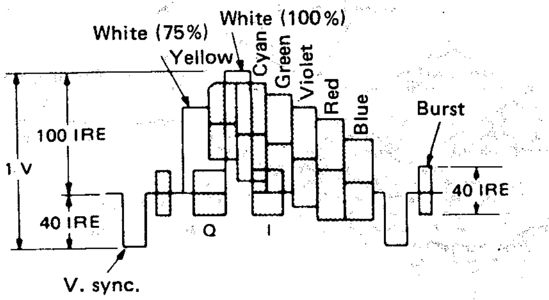
1. Record video signal (B/W is recommended) and play it back in SP and EP modes to confirm that the FM waveform meets the 'FM waveform standard' (Fig. 2-7-1) in either mode.
2. Referring to the Section 3 'Electrical Adjustment', perform total checkup and adjustment of the SERVO, VIDEO and AUDIO circuits.

SECTION 3
ELECTRICAL ADJUSTMENTS

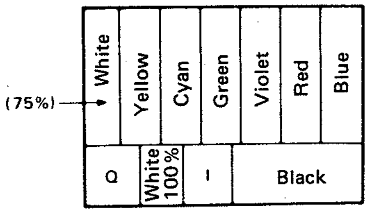
3.1 DECK SECTION

3.1.1 Required test equipment

1. Color monitor TV
2. Blank cassette tape (TC-20 SHG) for recording and playback
3. AC power adapter (AA-V5U, etc.)
4. Regulated DC power supply
5. Digital voltmeter
6. Video signal generator
7. Oscilloscope (dual-trace, more than 20 MHz)
8. Frequency counter
9. Audio tester

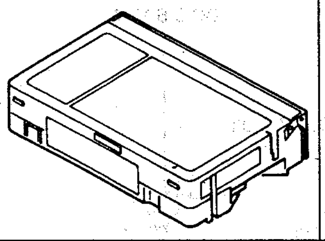
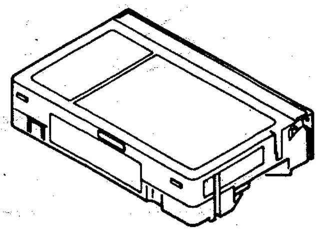
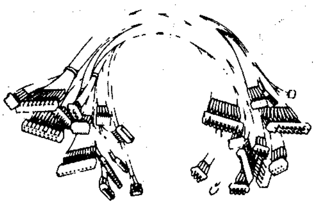
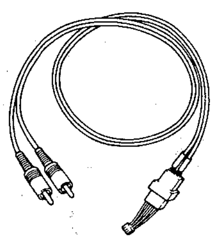
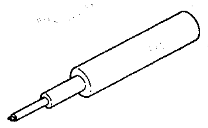
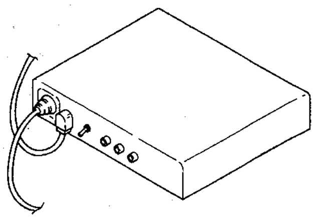

White (75%)
White (100%)
Yellow
Cyan
Green
Violet
Red
Blue
Burst
100 IRE
1 V
40 IRE
40 IRE
Q
I
V. sync.

Waveform of color bars signal


(75%)
White
Yellow
Cyan
Green
Violet
Red
Blue
Q
White 100%
I
Black

Color bars pattern

3.1.2 Special tools and equipment for adjustment

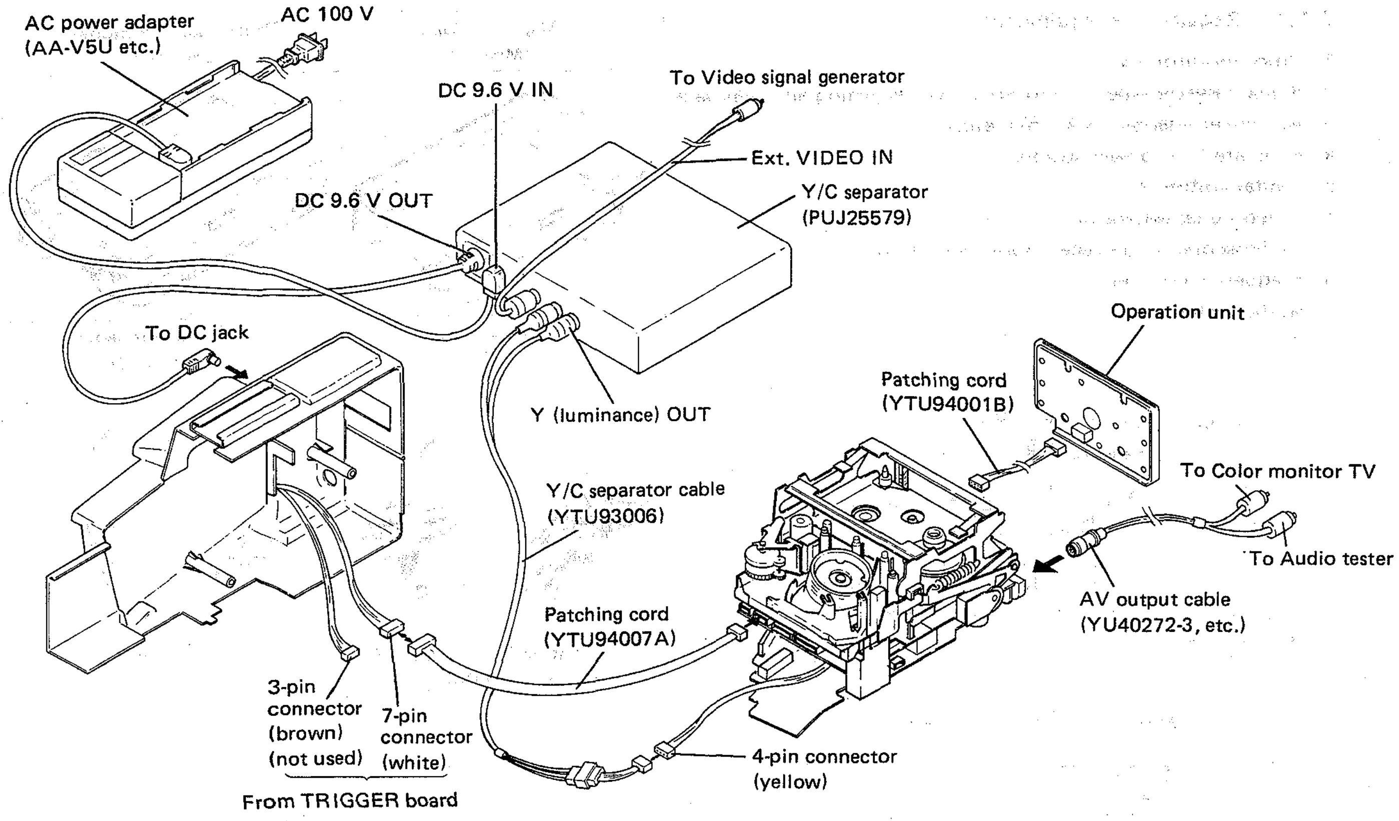
Alignment tape (MH-C1)	Check tape (EP mode) (CH-C1L)
	
Patching cord (YTU93014A)	Y/C separator cable (YTU93006)
	
Adjustment jig for compact VTR (YTU93004)	Y/C separator (PUJ25579)
	

3.1.3 Precautions

1. When a VHS-C cassette is set in the cassette housing, remove the cassette door beforehand since it touches the drum.
2. If the test equipment is connected to a chip TP for measurement and observation, make sure to use an IC clip, etc. to make it free from any stress.
3. For adjusting parts and points where the trimming resistor is used in the Y/C circuit, replace it with the specified semi-fixed resistor prior to the adjustment.

3.1.4 Connection of Y/C separator

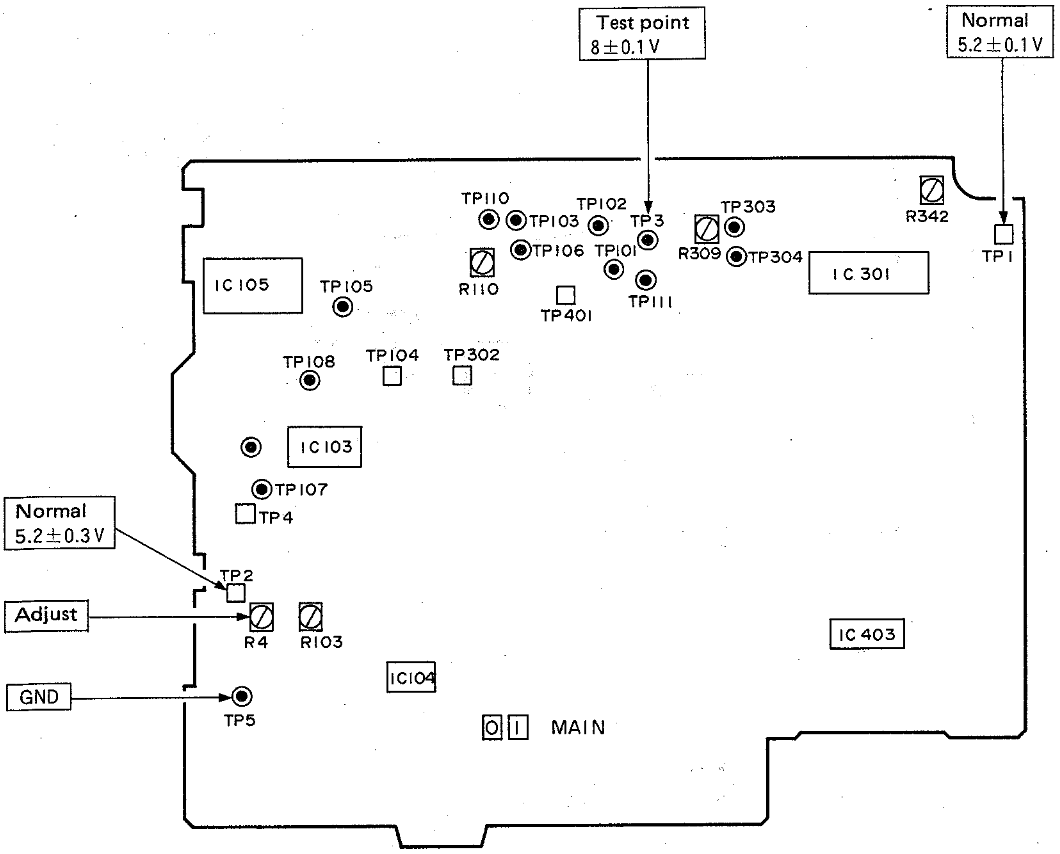
- For removing the deck section from the set, refer to the Section 1 "GENERAL DISASSEMBLY".


AC power adapter
(AA-V5U etc.)
AC 100 V
DC 9.6 V IN
To Video signal generator
Ext. VIDEO IN
Y/C separator
(PUJ25579)
DC 9.6 V OUT
To DC jack
Y (luminance) OUT
Operation unit
Patching cord
(YTU94001B)
To Color monitor TV
Y/C separator cable
(YTU93006)
To Audio tester
AV output cable
(YU40272-3, etc.)
Patching cord
(YTU94007A)
3-pin
connector
(brown)
(not used)
7-pin
connector
(white)
From TRIGGER board
4-pin connector
(yellow)

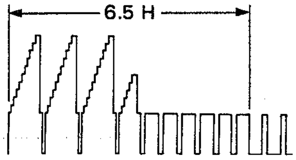
- **For properly and correctly proceeding all the electrical adjustments described in this deck section, connect the Y/C separator to the Y/C board and supply color bars signal from the signal generator. (Refer to Section 3.1.4.)**

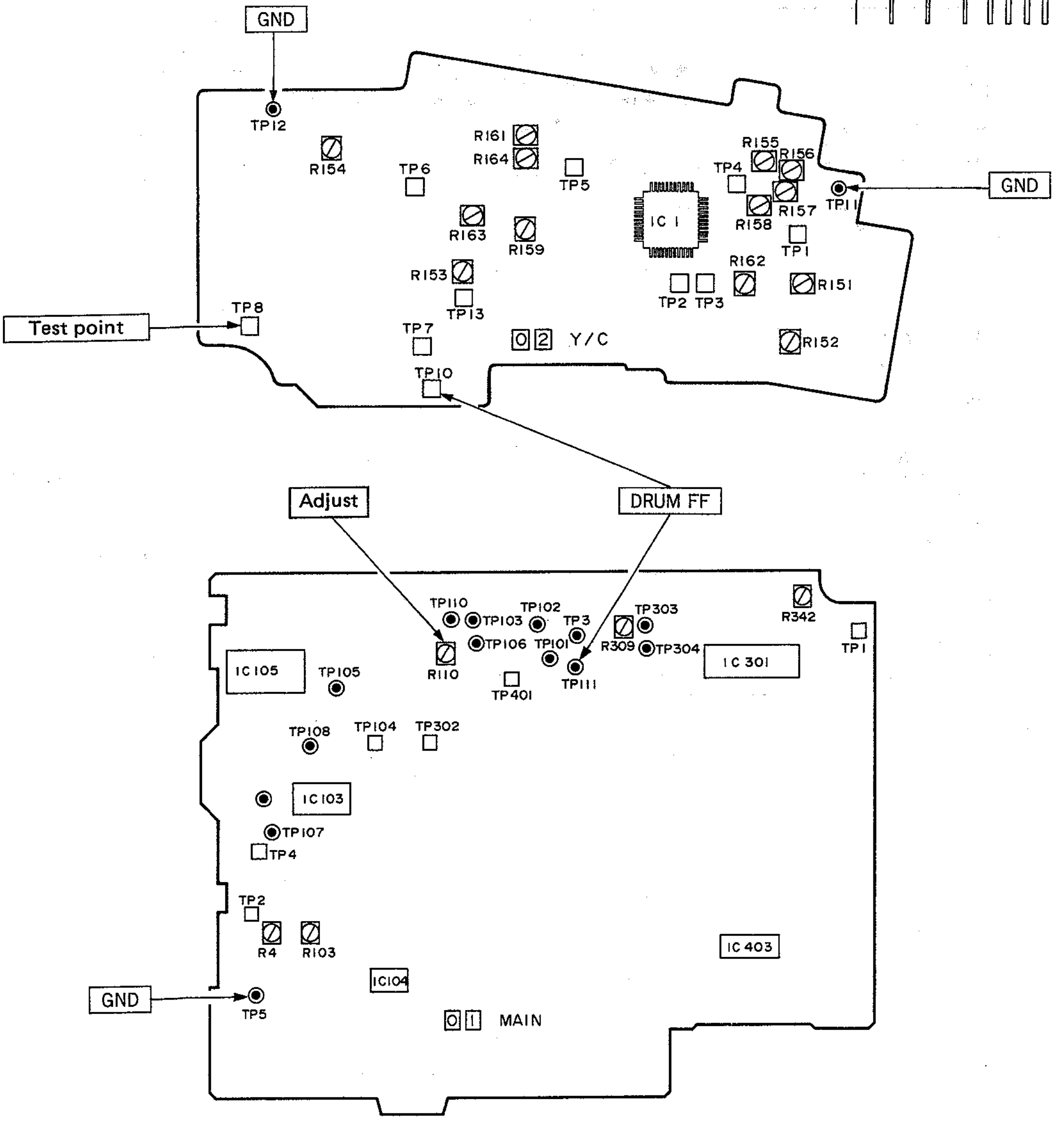
3.2 REGULATOR CIRCUIT

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	REG 8 V	•SP REC	TP3 (REG 8 V) $\boxed{0}\boxed{1}$ MAIN	R4 (REG 8 V) $\boxed{0}\boxed{1}$ MAIN	1) Connect a digital voltmeter between TP3 and TP5 (GND), and adjust R4 to obtain 8 V switching power.

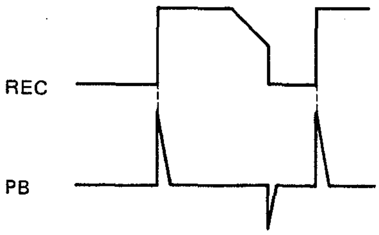

Test point
8±0.1 V
Normal
5.2±0.1 V
TP110
TP102
TP103
TP3
TP303
R342
R309
TP304
TP1
TP106
TP101
IC 105
TP105
R110
TP401
TP111
IC 301
TP108
TP104
TP302
IC 103
TP107
TP4
Normal
5.2±0.3 V
TP2
Adjust
R4
R103
IC 403
IC104
GND
TP5
01 MAIN

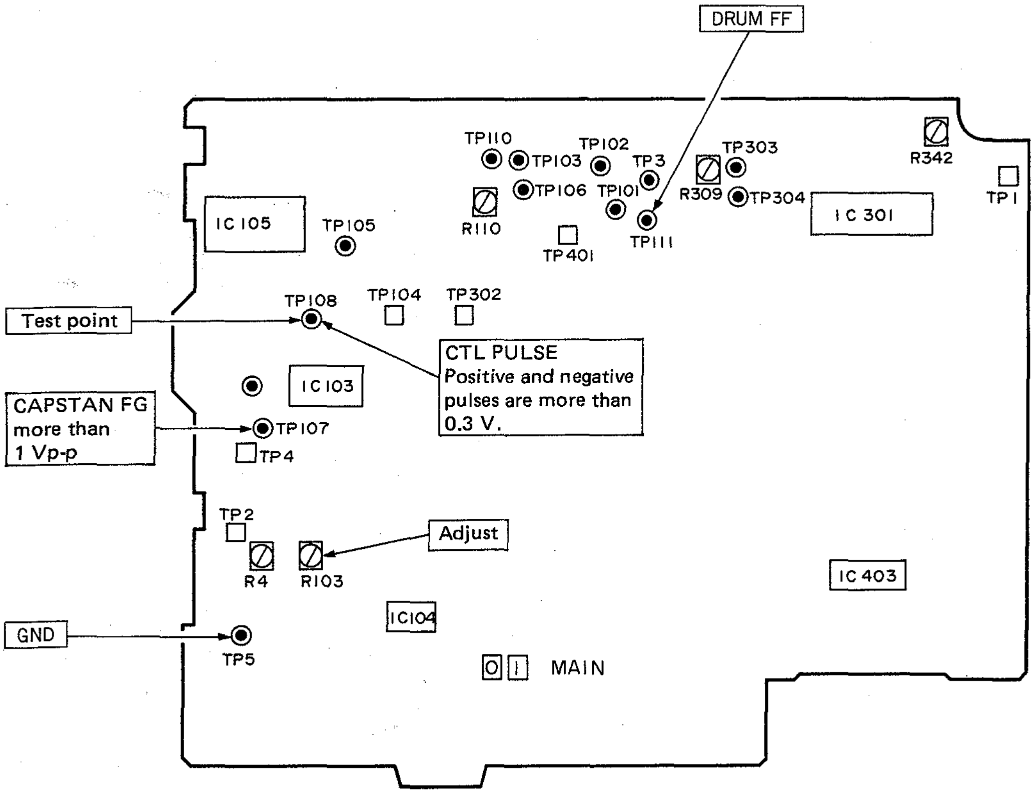
3.3 SERVO CIRCUIT

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	PB switching point	• MH-C1 (Stairstep) • Tracking VR: Set at center detent	TP8 (VIDEO OUT) 02 Y/C TP111 (DRUM FF) 01 MAIN	R110 (PB SW) 01 MAIN	**Note:** This adjustment must be performed after the adjustment of the CTL head position is completed. 1) Connect an oscilloscope to TP8 (VIDEO OUT) and TP111 which is for external triggering, and play back the alignment tape MH-C1. 2) Set the oscilloscope for external triggering with minus (–) slope signal. 3) Adjust R110 so that the trigger point becomes 6.5H before V. sync. 

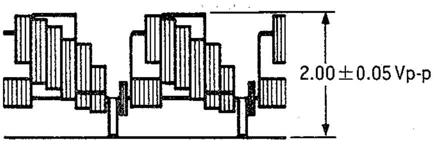
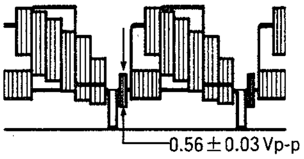


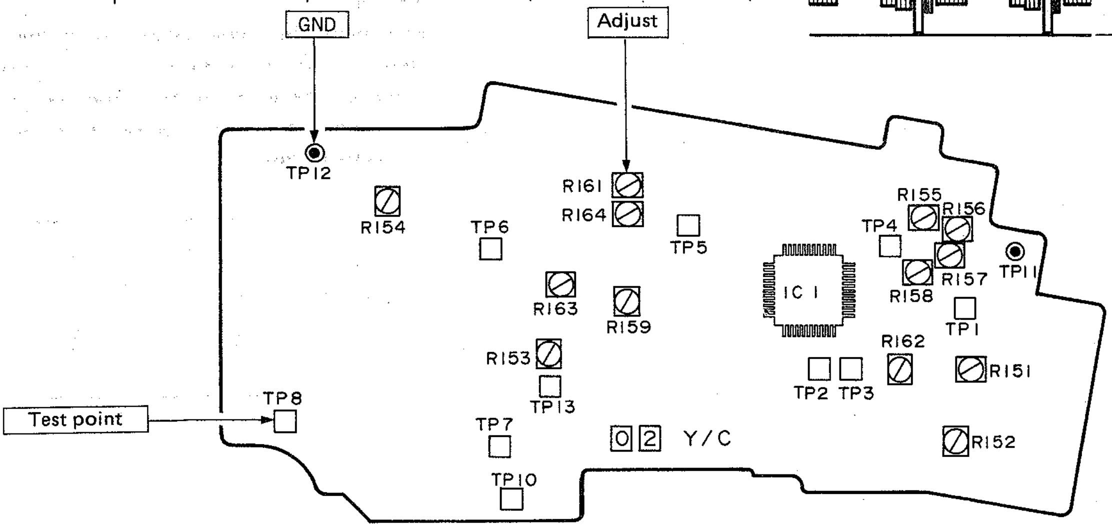
GND
TP12
R154
TP6
R161
R164
TP5
R155
R156
TP4
GND
TP11
IC 1
R157
R158
R163
R159
TP1
R162
R153
R151
TP2 TP3
TP13
TP8
Test point
TP7
02 Y/C
R152
TP10
Adjust
DRUM FF
TP110
TP102
TP103
TP3
TP303
R342
TP106
TP101
R309
TP304
TP1
IC105
TP105
R110
TP111
IC 301
TP401
TP108
TP104
TP302
IC103
TP107
TP4
TP2
R4
R103
IC 403
IC104
GND
TP5
01 MAIN

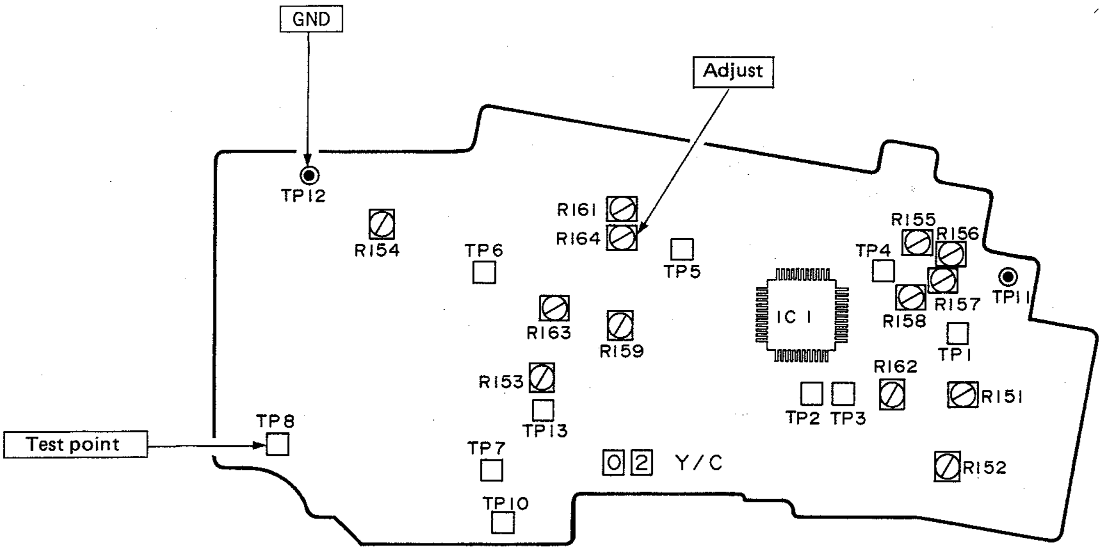
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
2	Tracking preset	• MH-C1 (Stairstep) • EP mode • Tracking VR: Set at center detent	TP108 (CTL PULSE) TP111 (DRUM FF) 0 1 MAIN	R103 (TRACKING PRESET) 0 1 MAIN	**Note:** This adjustment must be performed after completion of the adjustments of CTL head position and PB switching point. 1) Connect the oscilloscope to TP108 and TP-111 which is for external triggering, and set the mode for REC to record signals (in EP mode). 2) Observe the leading point of waveform at TP108. 3) Play back the signal recorded in the above step 1), and adjust R103 so that relationship between rise-up point of TP108 waveform in REC and its positive pulse in PB becomes the same in time. 

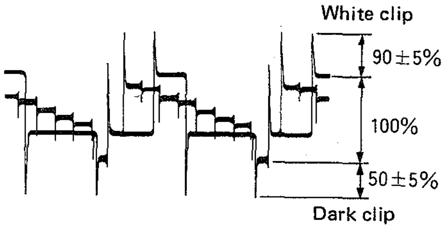

DRUM FF
TP110
TP102
TP103
TP3
TP303
R342
TP106
TP101
R309
TP304
IC 301
TP1
IC 105
TP105
R110
TP401
TP111
Test point
TP108
TP104
TP302
CTL PULSE
Positive and negative pulses are more than 0.3 V.
IC103
CAPSTAN FG
more than 1 Vp-p
TP107
TP4
TP2
Adjust
R4
R103
IC 403
IC104
GND
TP5
0 1 MAIN

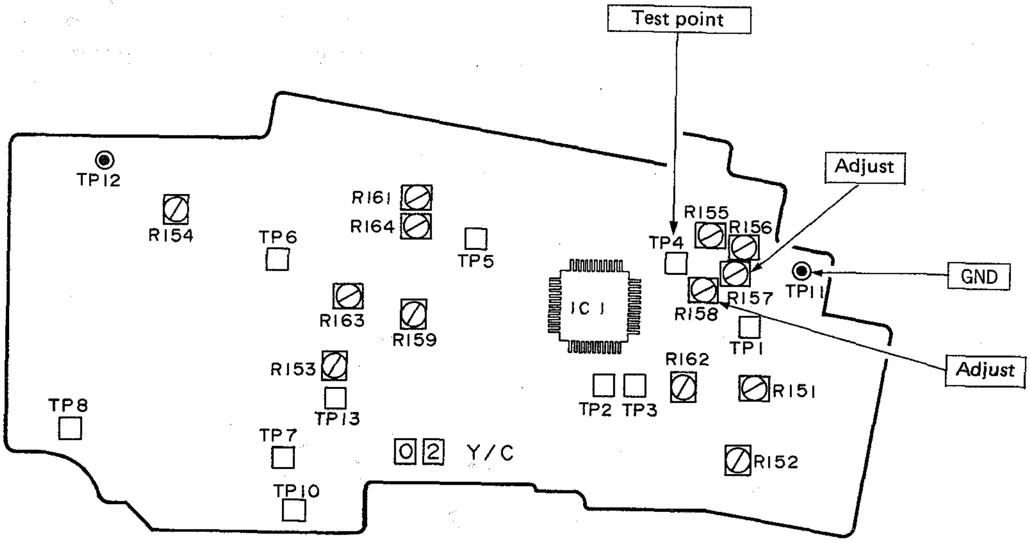
3.4 Y/C CIRCUIT

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	E-E Y level	• E-E mode • Color bars • Ext. input	TP8 (VIDEO OUT) 0 2 Y/C	R161 (E-E Y LEVEL) 0 2 Y/C	1) Confirm that Y level is 2.00 ± 0.05 Vp-p. 2) If not, replace R161 with a semi-fixed resistor (NVP1301-103N) and adjust it to obtain the specified value. 
2	E-E burst level	• E-E mode • Color bars • Ext. input	TP8 (VIDEO OUT) 0 2 Y/C	R164 (E-E BURST LEVEL) 0 2 Y/C	1) Confirm that burst level is 0.56 ± 0.03 Vp-p. 2) If not, replace R164 with a semi-fixed resistor (NVP1301-103N) and adjust it to obtain the specified value. 


GND
Adjust
TP12
R154
TP6
R161
R164
TP5
R155
R156
TP4
TP11
IC 1
R157
R158
R163
R159
TP1
R162
R153
R151
TP2 TP3
Test point
TP8
TP13
TP7
0 2 Y/C
R152
TP10

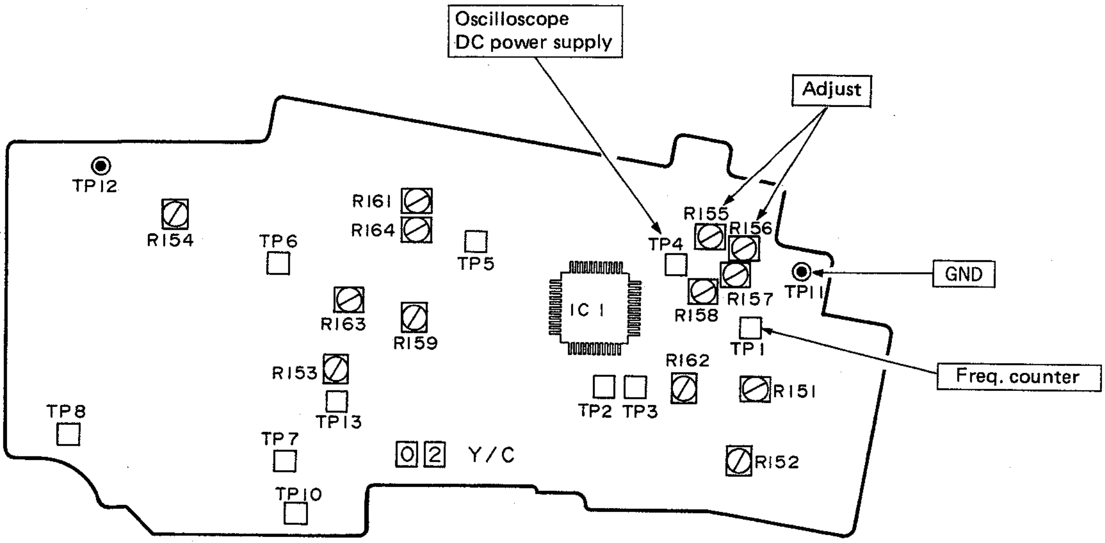

GND
Adjust
TP12
R154
TP6
R161
R164
TP5
R155
R156
TP4
TP11
IC 1
R157
R158
R163
R159
TP1
R162
R153
R151
TP2 TP3
Test point
TP8
TP13
TP7
0 2 Y/C
R152
TP10

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
3	White & dark clip	• E-E mode • Color bars • Ext. input	TP4 (EMPH OUT) 0 2 Y/C	R157 (WHITE CLIP LEVEL) R158 (DARK CLIP LEVEL) 0 2 Y/C	1) Connect the oscilloscope to TP4 and confirm that white clip level is 90 ± 5% and dark clip level is 50 ± 5%. 2) If not, replace R157 with a semi-fixed resistor (NVP1301-104N) and adjust it to obtain the specified values respectively. 

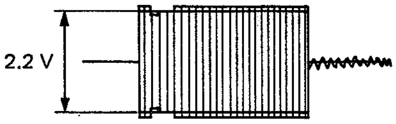


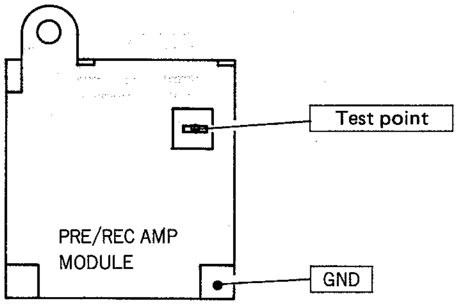
Test point
Adjust
GND
Adjust
TP12
R154
TP6
R161
R164
TP5
R163
R159
R153
TP13
TP8
TP7
TP10
0 2 Y/C
IC1
TP4
R155
R156
R157
R158
TP11
TP1
R162
TP2
TP3
R151
R152

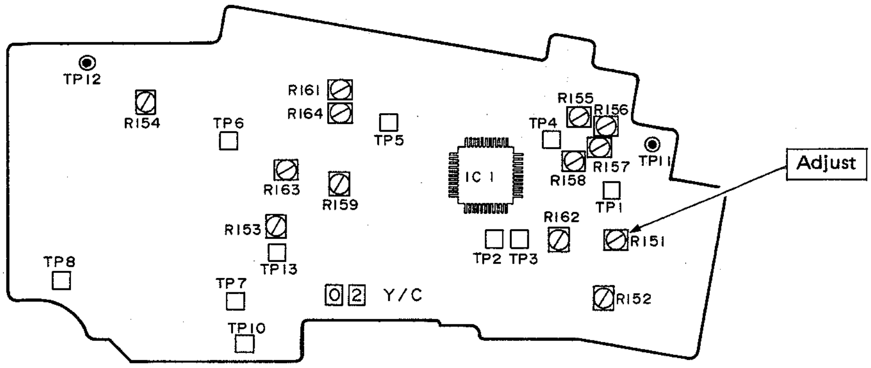
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
4	Carrier & deviation	• E-E mode • No input signal • Color bars	TP1 (REC FM) TP4 (EMPH OUT) 0 2 Y/C	R156 (CARRIER) R155 (DEVIATION) 0 2 Y/C	1) Connect a frequency counter to TP1 and confirm that the frequency is 3.4 MHz ± 50 kHz without input signal. 2) Connect the oscilloscope to TP4 to measure DC voltage of the white peak of the input color bars signal. At this time, note down the measured value as "A". 3) Without input signal, supply the DC voltage "A" to TP4 and confirm that frequency at TP1 is 4.4 MHz ± 50 kHz. 4) If the specified value is not obtained, replace R156 and R155 with semi-fixed resistors (NVP1301-473N for R156, NVP1301-103N for R155) and adjust them so that the frequency meets the specification. ● **Adjustment method** (1) Without input signal, adjust R156 so that frequency at TP1 becomes 3.4 MHz. (2) Without input signal, supply the DC voltage "A" to TP4 and adjust R144 to obtain 4.4 MHz as frequency at TP1.

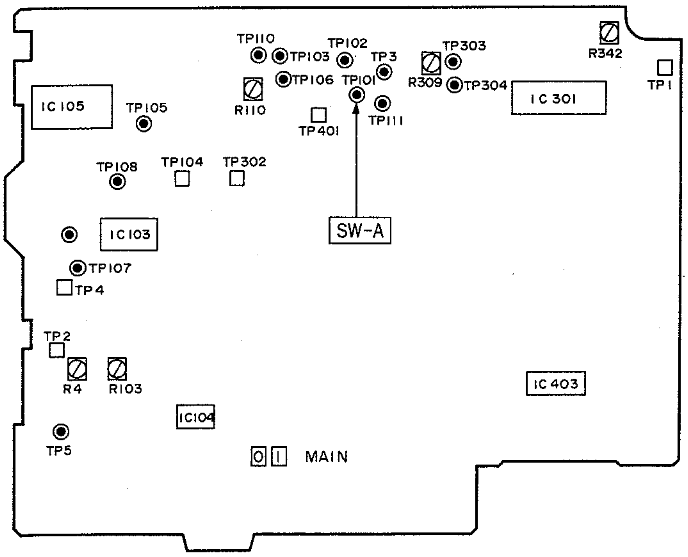


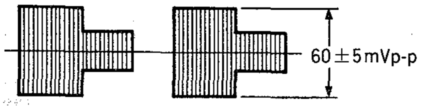
Oscilloscope
DC power supply
Adjust
GND
Freq. counter
TP12
R154
TP6
R161
R164
TP5
R163
R159
R153
TP13
TP8
TP7
TP10
0 2 Y/C
IC1
TP4
R155
R156
R157
R158
TP11
TP1
R162
TP2
TP3
R151
R152

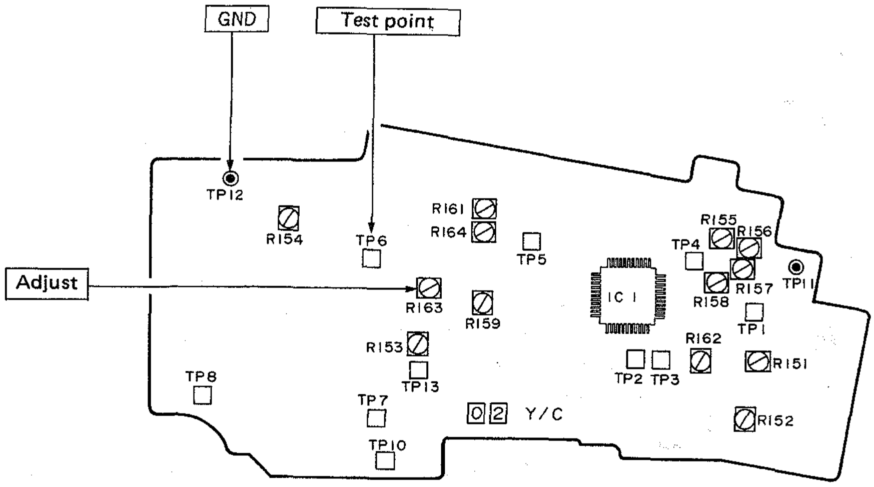
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
5	REC FM level	•REC mode •Color bars	HEAD terminal [PRE/REC AMP MODULE] TP101 (SW-A) 0 1 MAIN	R151 (REC FM LEVEL) 0 2 Y/C	1) Trigger the oscilloscope externally (– slope) with signal from TP101 and observe waveform at the HEAD terminal. 2) Adjust R151 so that FM level of the pedestal part of the waveform becomes 2.2 V. 


Test point
PRE/REC AMP MODULE
GND

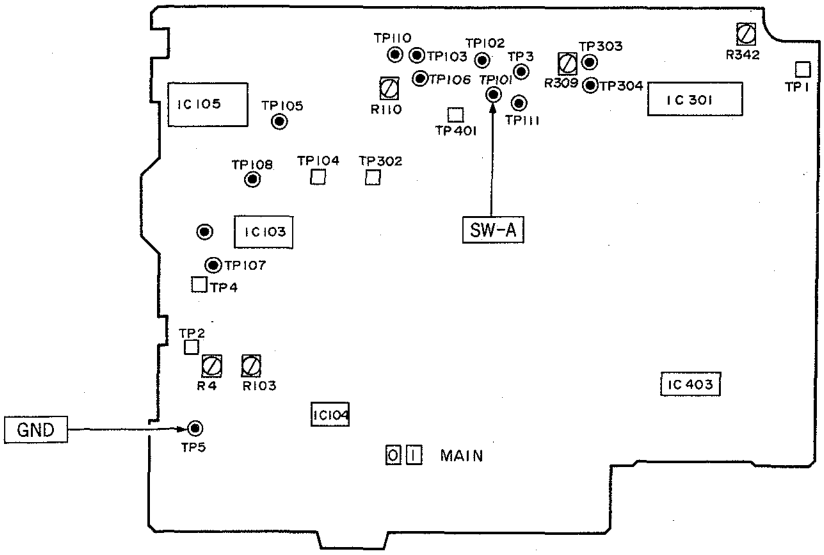

TP12
R154
TP6
R161
R164
TP5
R155
R156
TP4
TP11
R157
R158
TP1
IC1
Adjust
R163
R159
R153
TP13
R162
R151
TP2
TP3
TP8
TP7
0 2 Y/C
R152
TP10


TP110
TP103
TP102
TP3
TP303
R342
TP106
TP101
R309
TP304
TP1
IC105
TP105
R110
TP401
TP111
IC301
TP108
TP104
TP302
SW-A
IC103
TP107
TP4
TP2
R4
R103
IC403
IC104
TP5
0 1 MAIN

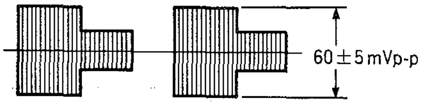
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
6	PB color level	• MH-C1 (Color bars)	TP6 (PB COLOR) 02 Y/C TP101 (SW-A) 01 MAIN	R163 (PB COLOR LEVEL) 02 Y/C	1) Trigger the oscilloscope externally (+ slope) with signal from TP101 and observe waveform at TP6. 2) Take note of the signal whose level is the biggest of those of color signals played back by the four heads, and adjust R163 so that its level becomes 60 mV at maximum. 

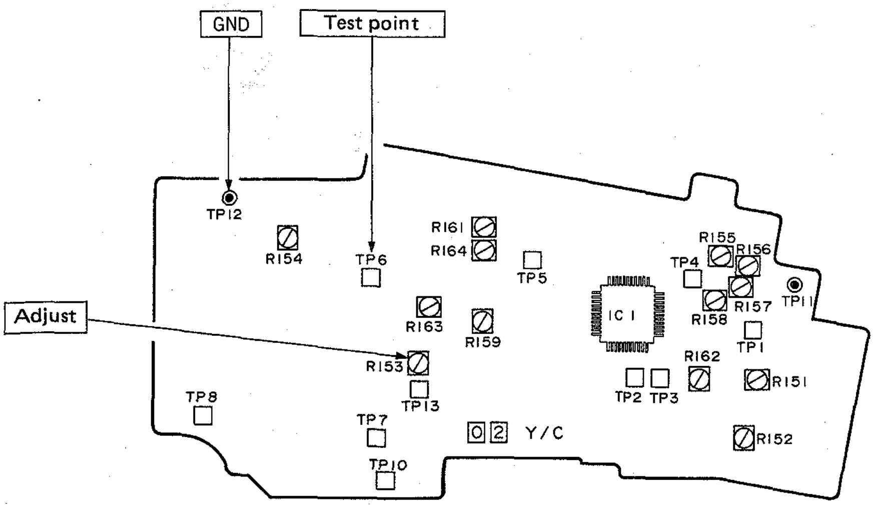


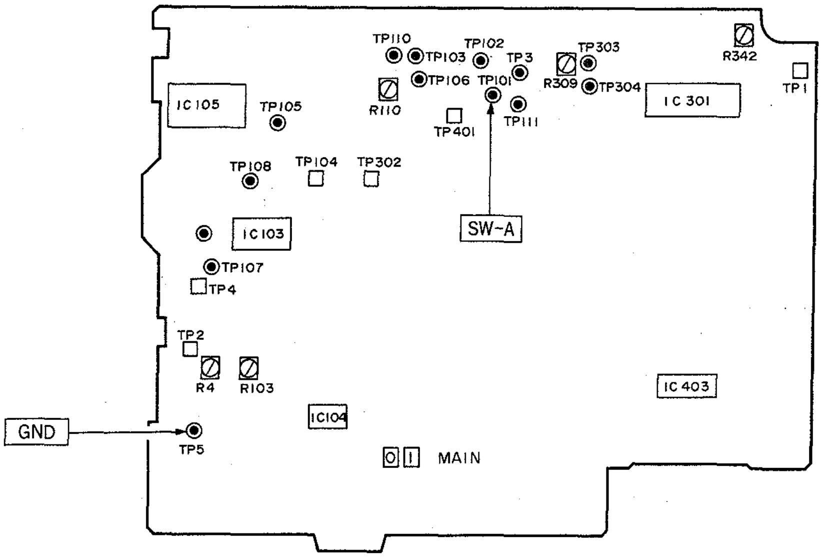
GND
Test point
Adjust
TP12
R154
TP6
R161
R164
TP5
R155
R156
TP4
TP11
R157
R158
IC1
TP1
R163
R159
R153
R162
R151
TP8
TP13
TP2
TP3
TP7
02 Y/C
R152
TP10

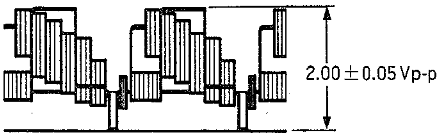


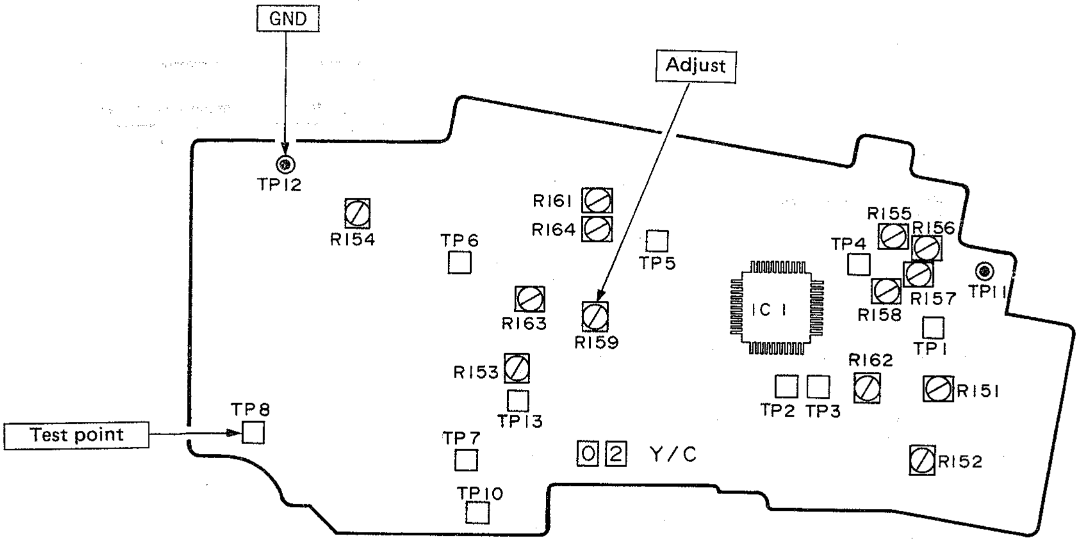
TP110
TP102
TP103
TP3
TP303
R342
TP106
TP101
R309
TP304
TP1
IC105
TP105
R110
TP401
TP111
IC301
TP108
TP104
TP302
IC103
SW-A
TP107
TP4
TP2
R4
R103
IC403
GND
IC104
TP5
01 MAIN

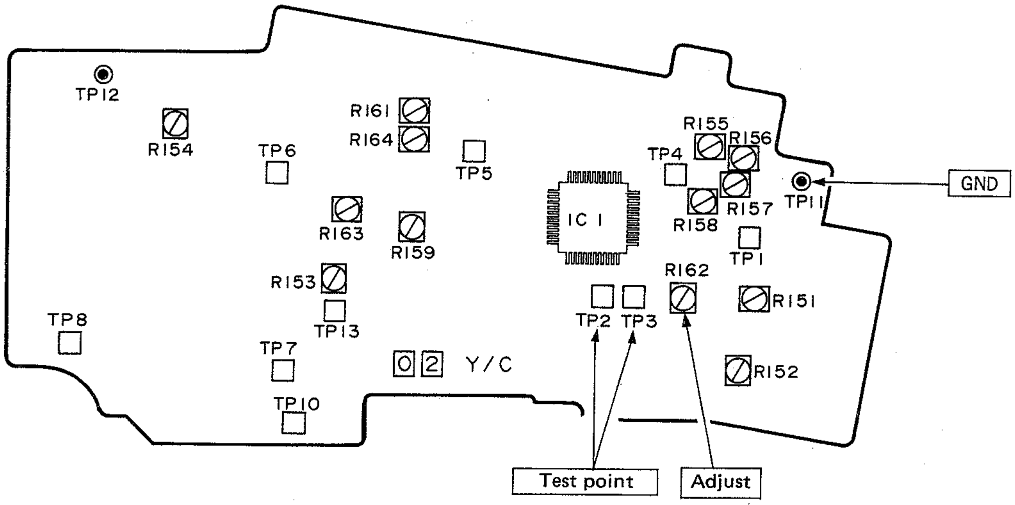
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
7	REC color level	• Color bars • REC then PB	TP6 (PB COLOR) 02 Y/C TP101 (SW-A) 01 MAIN	R153 (REC COLOR LEVEL) 02 Y/C	1) Record the color bars signal and play it back. 2) Trigger the oscilloscope externally (+ slope) with signal from TP101 and observe waveform at TP6. 3) Confirm that the biggest level of those of color signals played back by the four heads respectively is 60 ± 5 mV. 4) If not, perform fine adjustment of R153 (level increases by clockwise turning) and repeat the steps 1) through 4) until the level becomes as specified. 

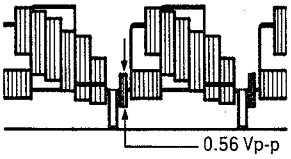
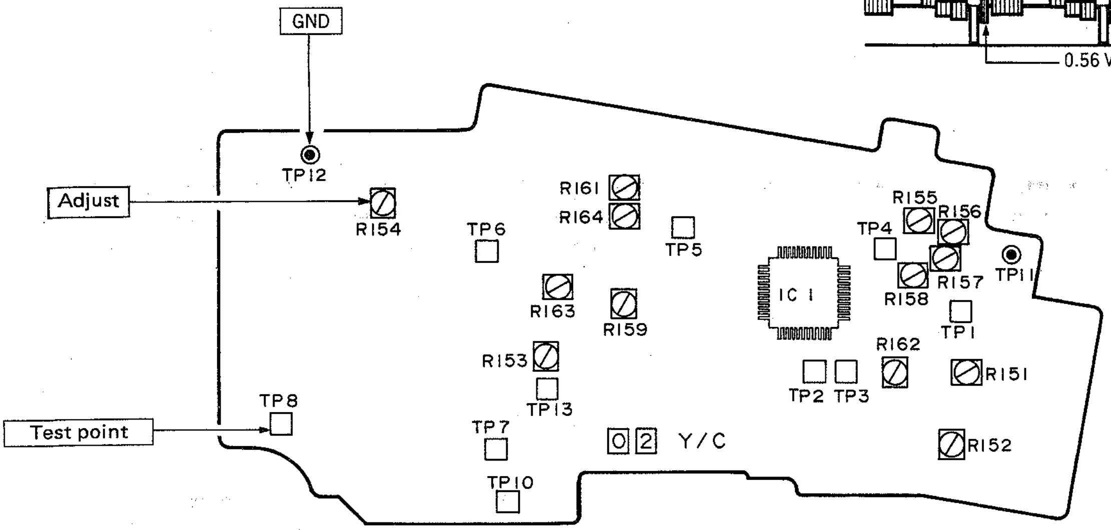
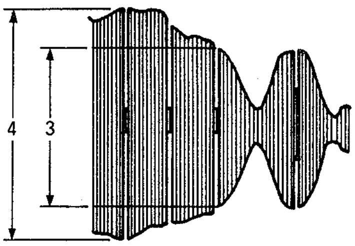
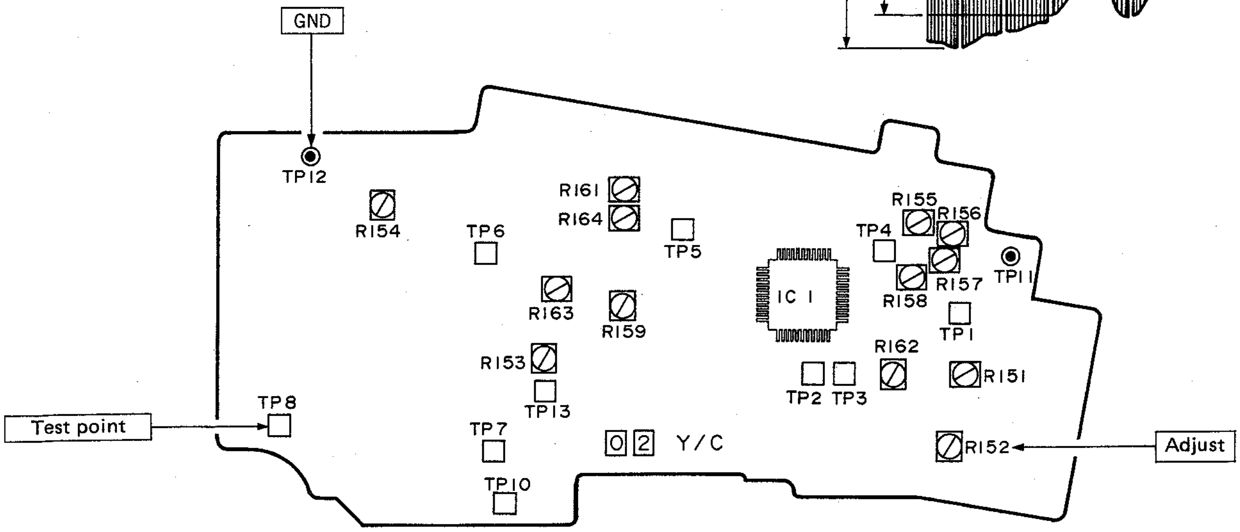

GND
Test point
TP12
R154
TP6
R161
R164
TP5
R155
R156
TP4
TP11
IC1
R157
R158
TP1
Adjust
R163
R159
R162
R153
R151
TP2
TP3
TP8
TP13
TP7
02 Y/C
R152
TP10


TP110
TP102
TP103
TP3
TP303
R342
TP106
TP101
R309
TP304
TP1
IC105
TP105
R110
TP401
TP111
IC301
TP108
TP104
TP302
SW-A
IC103
TP107
TP4
TP2
R4
R103
IC403
GND
IC104
TP5
01 MAIN

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
8	PB Y level	• Color bars • REC then PB	TP8 (VIDEO OUT) 02 Y/C	R159 (PB Y LEVEL) 02 Y/C	1) Record the color bars signal and play it back. 2) Confirm that PB Y level is 2.00 ± 0.05 Vp-p. 3) If not, replace R159 with a semi-fixed resistor (NVP1301-473N) and adjust it to obtain the specified value. 
9	1H delay Y level	• Color bars • REC then PB	TP2 (PB Y) TP3 (PB 1H DL Y) 02 Y/C	R162 (PB 1H DL Y LEVEL) 02 Y/C	1) Record the color bars signal and play it back. 2) Confirm that signal level at TP2 is equal to that at TP3 (100 ± 5%). 3) If not, replace R162 with a semi-fixed resistor (NVP1301-222N) and adjust it to obtain the specified value.


GND
Adjust
TP12
R154
TP6
R161
R164
TP5
R163
R159
R153
TP13
TP8
Test point
TP7
TP10
02 Y/C
R155
R156
TP4
R157
TP11
R158
IC 1
TP1
R162
TP2 TP3
R151
R152


TP12
R154
TP6
R161
R164
TP5
R163
R159
R153
TP13
TP8
TP7
TP10
02 Y/C
IC 1
R155
R156
TP4
R157
TP11
GND
R158
TP1
R162
R151
TP2 TP3
R152
Test point
Adjust

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
10	PB burst level	• Color bars • REC then PB	TP8 (VIDEO OUT) 0 2 Y/C	R154 (PB BURST LEVEL) 0 2 Y/C	1) Connect the oscilloscope to TP8 (VIDEO OUT). 2) Adjust R154 so that burst level becomes 0.56 Vp-p.  
11	Video EQ	• SP mode • Color sweep • REC then PB	TP8 (VIDEO OUT) 0 2 Y/C	R152 (PB EQ) 0 2 Y/C	1) Record the color sweep signal and play it back. 2) Adjust R152 so that level of the 2 MHz color sweep signal becomes 3/4 of that of the 100 kHz signal.  

0.56 Vp-p

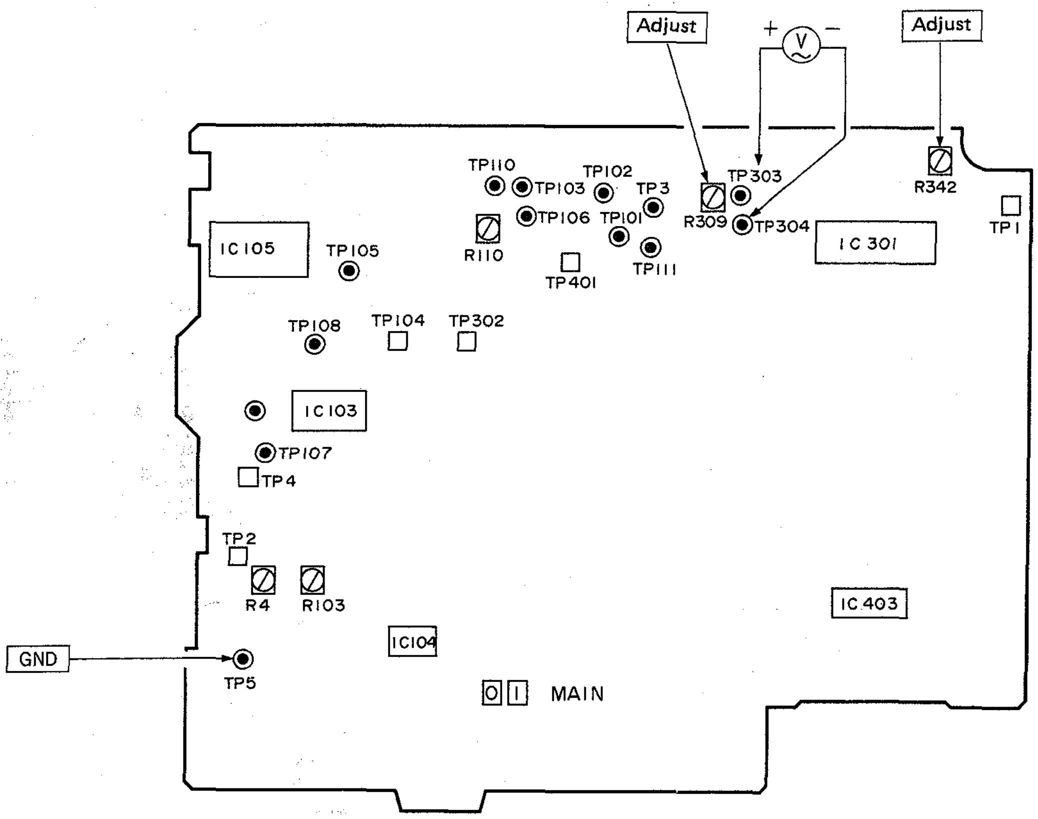
GND
TP12
Adjust
R154
Test point
TP8
R161
R164
TP6
TP5
R163
R159
R153
TP13
TP7
TP10
0 2 Y/C
IC 1
R155
R156
TP4
R157
R158
TP11
TP1
R162
TP2
TP3
R151
R152

4
3

GND
TP12
R154
Test point
TP8
R161
R164
TP6
TP5
R163
R159
R153
TP13
TP7
TP10
0 2 Y/C
IC 1
R155
R156
TP4
R157
R158
TP11
TP1
R162
TP2
TP3
R151
R152
Adjust

3.5 AUDIO CIRCUIT

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	Bias level	• REC mode • No input signal	TP303 (HOT) TP304 (GND) 01 MAIN	R342 (BIAS LEVEL) 01 MAIN	1) Connect an audio tester's HOT side to TP303 and its GND to TP304, respectively. 2) Adjust R342 so that bias level between TP303 and TP304 becomes 2.2 mVrms.
2	PB audio level	• MH-C1 (color bars)	AUDIO LINE OUT	R309 (PB AUDIO LEVEL) 01 MAIN	1) Play back the alignment tape MH-C1 (1 kHz segment) and adjust R309 so that signal level at LINE OUT becomes –6 dBs.



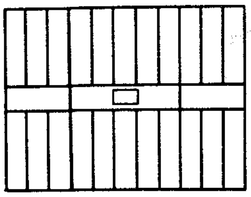
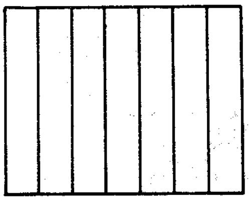
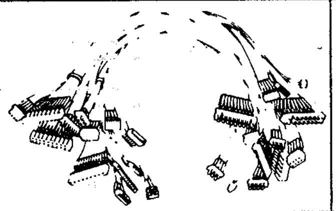
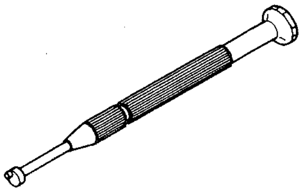
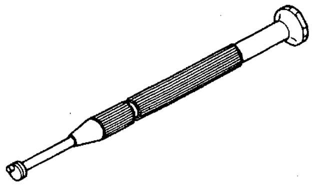
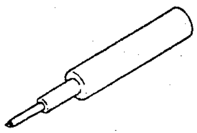
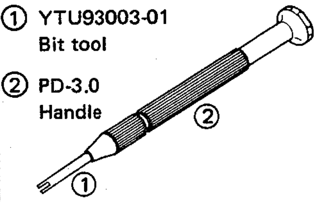
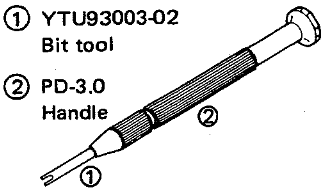
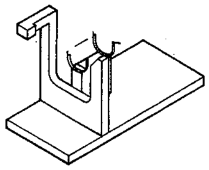
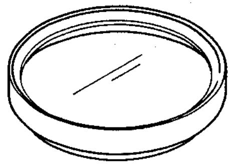
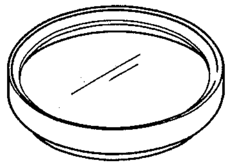
Adjust
+ V –
Adjust
TP110
TP102
TP103
TP3
TP303
R342
TP106
TP101
R309
TP304
TP1
IC105
TP105
R110
TP111
IC301
TP401
TP108
TP104
TP302
IC103
TP107
TP4
TP2
R4
R103
IC403
GND
TP5
IC104
01 MAIN

3.6 CAMERA SECTION

3.6.1 Required tools and test equipment for adjustments

1. AC power adapter (AA-V5U etc.)
2. Oscilloscope (dual-trace, more than 50 MHz)
3. Vectorscope
4. Frequency counter
5. Color monitor TV
6. Regulated DC power supply
7. Color temperature conversion filters and ND filters (Filter size : ϕ 49 mm) [See Sect. 3.6.2.]

3.6.2 Special equipment and tools required for adjustments

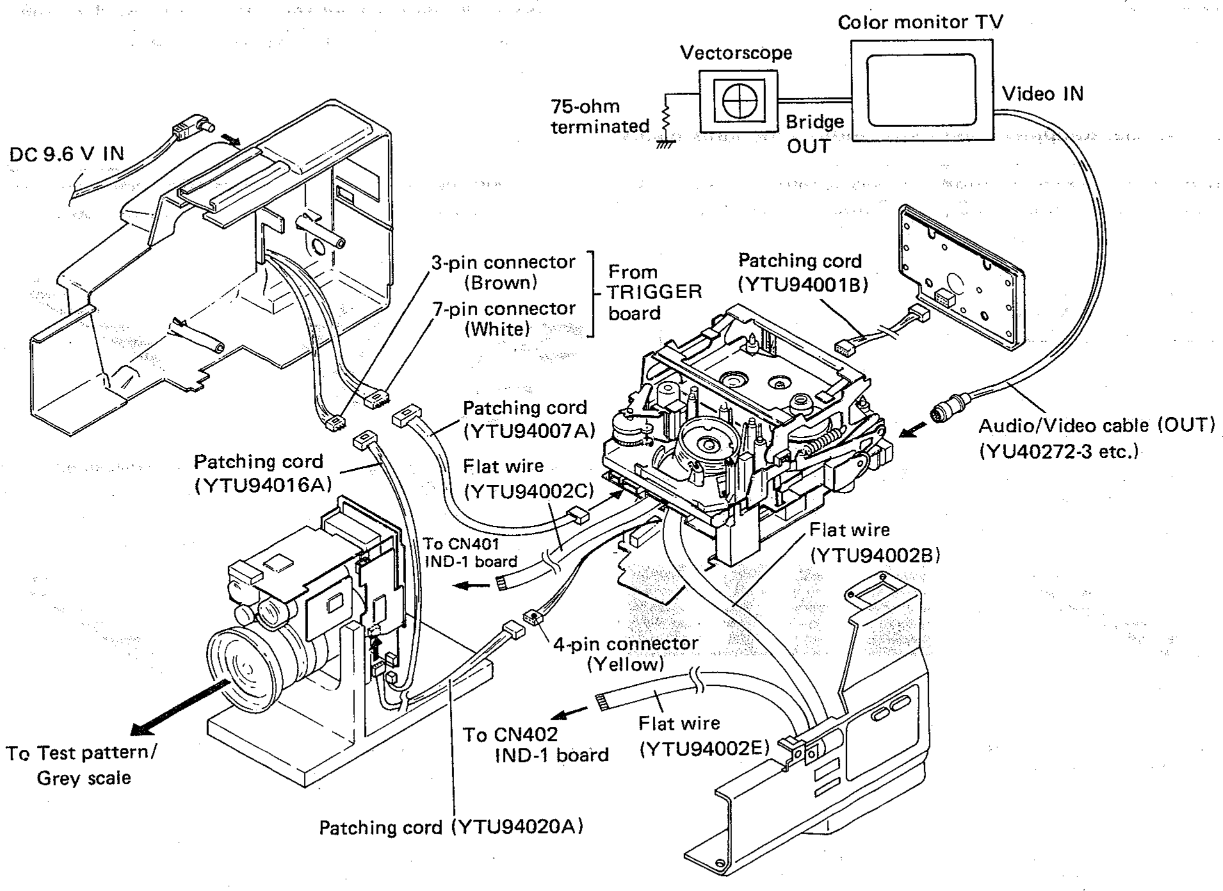
Grey scale pattern (GS-2A/GS-2AS) Reflection type, 11 steps, $\gamma = 2.2$	Color bars pattern (CC-2A/CC-2AS) Reflection type, 7-color	Patching cord YTU93014A	Back focus adjustment handle PUJ37186A
			
Auto focus unit Back focus adjustment handle PUJ37186B	Auto focus unit Back focus adjustment chart PUJ93944	Adjustment jig for compact VTR YTU93004	Chip parts replacement jig ass'y YTU93003A (Incl. ①, ②)
			
Chip parts replacement jig ass'y YTU93003B (Incl. ①, ②)	Adjust stand (YTU93910A)	Color temperature conversion filter (PUJ53340A - C2, C4, C8)	Neutral density filter (PUJ53341A - ND2, ND4, ND8)
			
			Color compensating filter - CC10Y (CC10Y filter made by Kodak)
			This filter is CC10Y in Kodak.

3.6.3 Precautions

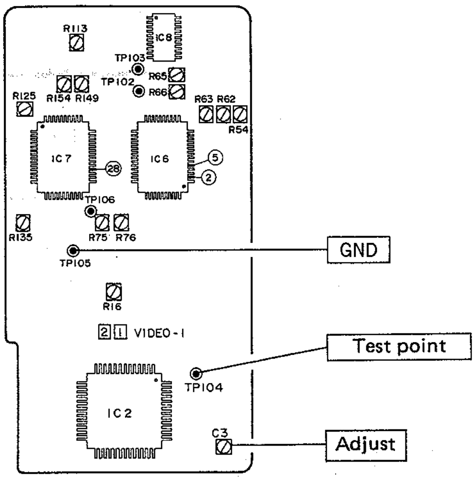
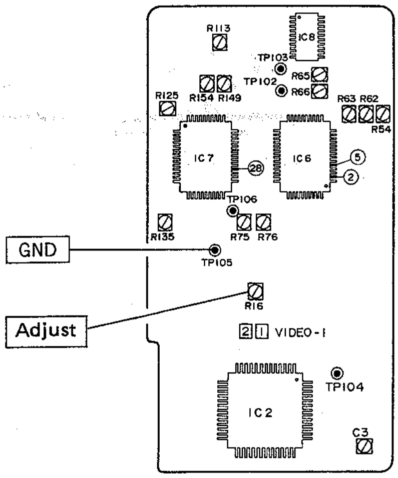
1. As the lighting fixture, it is recommended to use two or more halogen lamps (color temperature: 3200 K) for intensity of illumination of 1200 lux or more.
2. Use clean test patterns and camera filters.
3. Camera adjustments must be performed in a place where the camera and camera object are not influenced by other ray and light than the said lighting fixture.
4. The following controls/switches must be set as indicated below for all adjustments unless otherwise specified.
   FOCUS : MANUAL
   IRIS : AUTO
   WHITE BALANCE : PRESET INDOOR
   SHUTTER Speed : STD (STANDARD)
5. Unless otherwise indicated, connect the CH-B probe of an oscilloscope to TP303 (Y OUT) of $\boxed{2}\boxed{3}$ ENCODER board for synchronous minus (negative) trigger while connect the CH-A probe to the specified test point for the adjustment.

3.6.4 Connection for adjustments

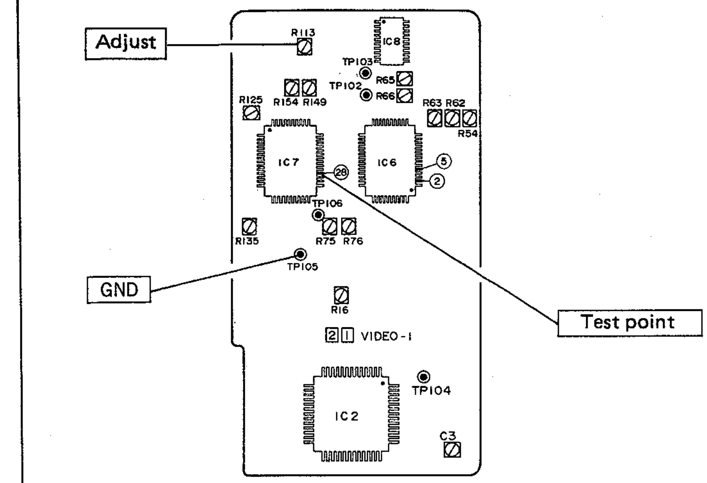
For disassembling the camera section from the set, refer to Section 1 "GENERAL DISASSEMBLY".

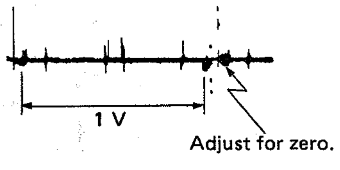

Color monitor TV
Vectorscope
75-ohm terminated
Bridge OUT
Video IN
DC 9.6 V IN
3-pin connector (Brown)
7-pin connector (White)
From TRIGGER board
Patching cord (YTU94001B)
Patching cord (YTU94007A)
Flat wire (YTU94002C)
Patching cord (YTU94016A)
Audio/Video cable (OUT) (YU40272-3 etc.)
To CN401 IND-1 board
Flat wire (YTU94002B)
4-pin connector (Yellow)
To Test pattern/ Grey scale
To CN402 IND-1 board
Flat wire (YTU94002E)
Patching cord (YTU94020A)

3.7 ADJUSTMENT PROCEDURE OF CAMERA SECTION

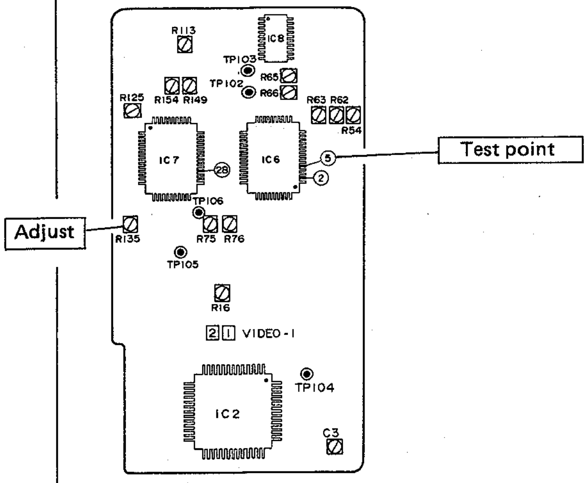
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	SSG clock OSC	• Rehearsal mode	TP104 $\boxed{2}\boxed{1}$ VIDEO-1  R113 IC8 TP103 R65 TP102 R66 R125 R154 R149 R63 R62 R54 IC7 IC6 28 5 2 TP106 R135 R75 R76 GND TP105 R16 21 VIDEO-1 Test point TP104 IC2 C3 Adjust	C3 (CLOCK OSC) $\boxed{2}\boxed{1}$ VIDEO-1	1) Connect a frequency counter to TP104, and adjust C3 to obtain 12.713285 MHz ± 80 Hz.
2	Blooming	• Rehearsal mode	Monitor TV  R113 IC8 TP103 R65 TP102 R66 R125 R154 R149 R63 R62 R54 IC7 IC6 28 5 2 TP106 R135 R75 R76 GND TP105 R16 Adjust 21 VIDEO-1 TP104 IC2 C3	R16 (BLOOMING) $\boxed{2}\boxed{1}$ VIDEO-1	1) Pick up a fluorescent light and observe the image on a monitor TV. 2) Turn R16 fully in both directions and notice the range in which blooming occurs. 3) Then, adjust R16 to where blooming is absent.

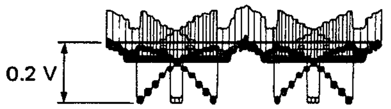
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
3	V. edge balance	• Rehearsal mode • Grey scale	IC7 pin 28 [2][1] VIDEO-1	R113 (V. EDGE) [2][1] VIDEO-1	1) Pick up the grey scale pattern and observe waveform at pin 28 of IC7. 2) Adjust R113 to minimize average level of the waveform.
4	YH gain & E-E level	• Rehearsal mode • Grey scale	IC6 pin 5 (SAMPLING OUT) [2][1] VIDEO-1 TP303 (Y OUT) [2][3] ENCODER	R446 (E-E LEVEL) [2][4] IND-1 R135 (YH GAIN) [2][1] VIDEO-1	1) Pick up the grey scale pattern and observe waveform at pin 5 of IC6 with 10 kΩ terminator. 2) Adjust R446 so that level of the video signal becomes 0.2 V. 3) Connect an oscilloscope to TP303 and adjust R135 to obtain 0.7 V as the signal level.

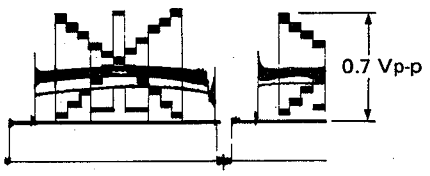

Adjust
R113
IC8
TP103
TP102
R65
R66
R125
R154
R149
R63
R62
R54
IC7
IC6
28
5
2
TP106
R135
R75
R76
GND
TP105
R16
Test point
[2][1] VIDEO-1
TP104
IC2
C3


1 V
Adjust for zero.

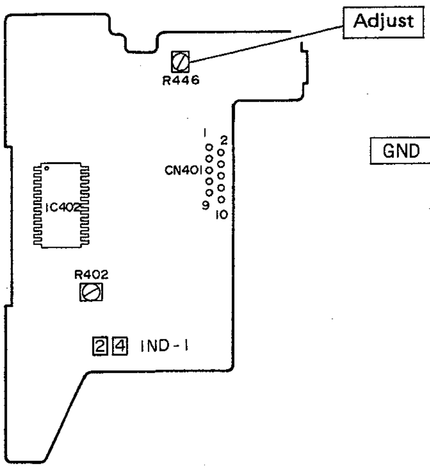
V. rate

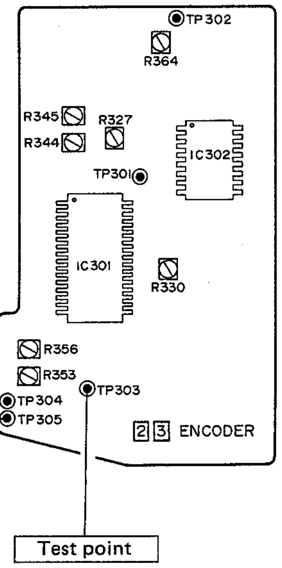

R113
IC8
TP103
TP102
R65
R66
R125
R154
R149
R63
R62
R54
IC7
IC6
28
5
2
Test point
TP106
Adjust
R135
R75
R76
TP105
R16
[2][1] VIDEO-1
TP104
IC2
C3

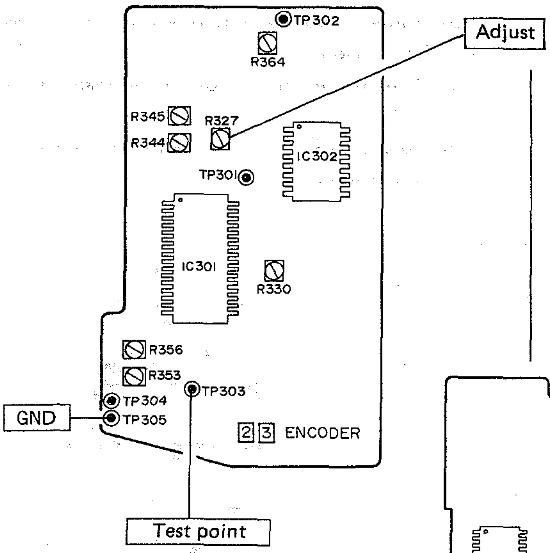
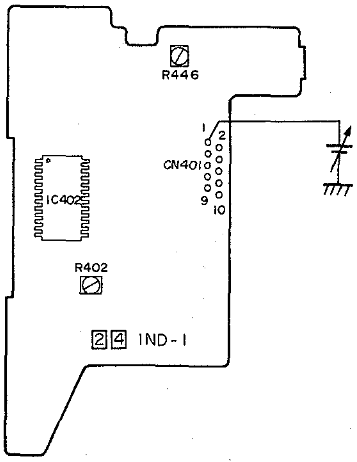
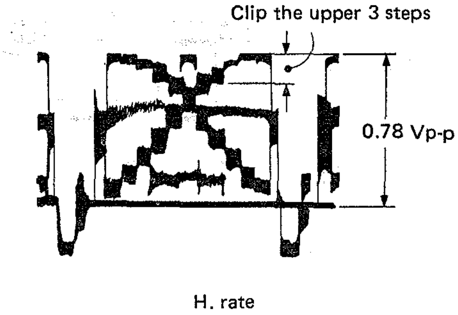
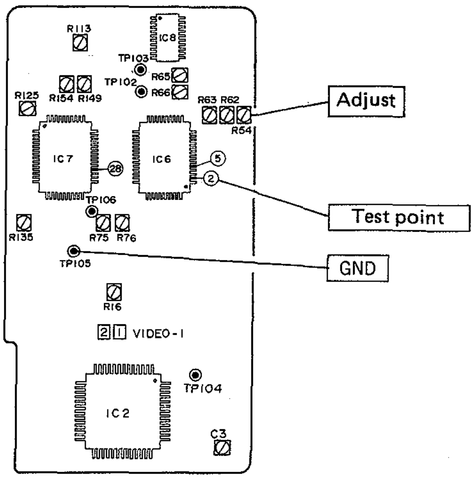




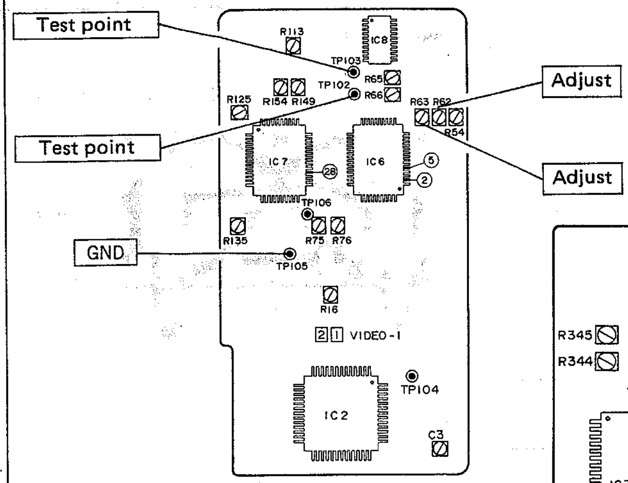
H. rate

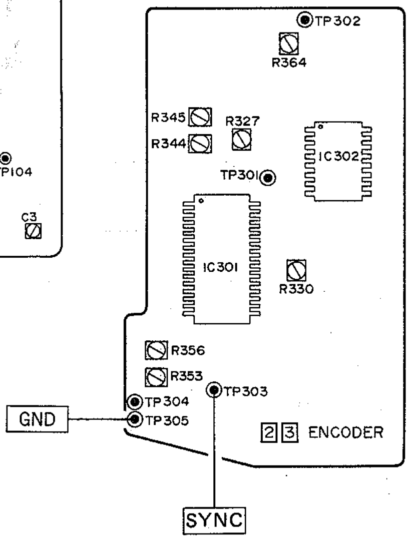

Adjust
R446
CN401
1
2
9
10
IC402
R402
[2][4] IND-1

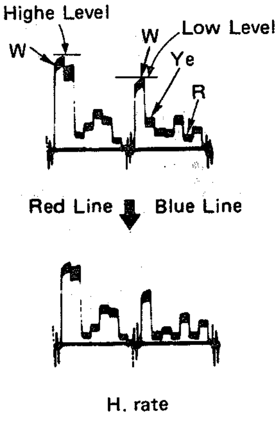

TP302
R364
R345
R327
R344
IC302
TP301
IC301
R330
R356
R353
TP303
TP304
TP305
GND
[2][3] ENCODER
Test point

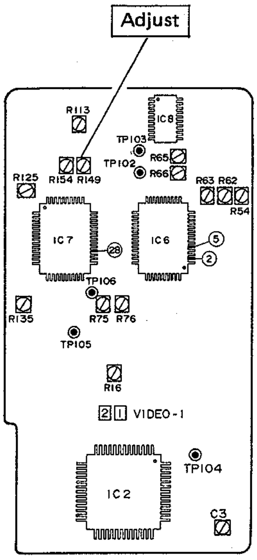
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
5	White clip level	• Rehearsal mode • Grey scale  TP302 R364 Adjust R345 R327 R344 IC302 TP301 IC301 R330 R356 R353 TP303 TP304 GND TP305 2 3 ENCODER Test point	TP303 (Y OUT) 2 3 ENCODER	R327 (WHITE CLIP LEVEL) 2 3 ENCODER  R446 1 2 CN401 IC402 9 10 R402 2 4 IND-1	1) Pick up the grey scale pattern and observe waveform at TP303. 2) Supplying DC voltage to pin 1 of CN401, perform fine control of the voltage to clip the upper 3 steps of the grey scale. 3) Adjust R327 to obtain 0.78 V as the video signal level. 
6	AGC	• Rehearsal mode • Lens: closed  R113 IC8 TP103 TP102 R65 R66 R125 R154 R149 R63 R62 R54 Adjust IC7 IC6 28 5 2 TP106 Test point R135 R75 R76 TP105 GND R16 2 1 VIDEO-1 TP104 IC2 C3	IC6 pin 2 2 1 VIDEO-1	R54 (AGC) 2 1 VIDEO-1	1) Cap the lens. 2) With the oscilloscope connected to pin 2 of IC6 of 2 1 VIDEO-1 board, adjust R54 to obtain 1.1 V of the DC voltage.

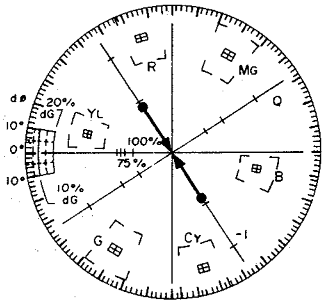
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
7	R/B separation	• Rehearsal mode • Color bars	TP103 (R) TP102 (B) 2 1 VIDEO-1 TP303 (Y OUT) 2 3 ENCODER	R63 (R SEP) R62 (B SEP) 2 1 VIDEO-1	1) Connect the oscilloscope to TP103. 2) Set the oscilloscope for external trigger to TP303 and observe waveform of the BLUE line (see figure below) as the oscilloscope is set to the HOLD OFF mode. 3) Adjust R63 to equalize the YELLOW and RED levels. 4) Change the connection of the oscilloscope to TP102. 5) Adjust R62 for the same purpose of the above steps 2) and 3).
8	Color offset	• Rehearsal mode • Lens: closed	Vectorscope	R149 (COLOR OFFSET) 2 1 VIDEO-1	1) Cap the lens. 2) Adjust R149 so that dots are centered at the same point on the vectorscope.

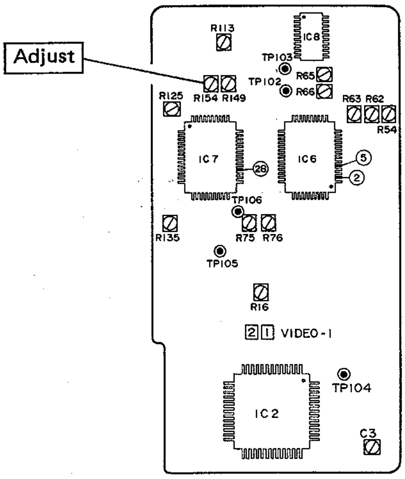
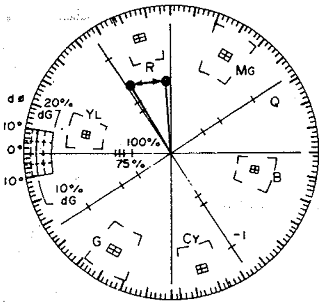
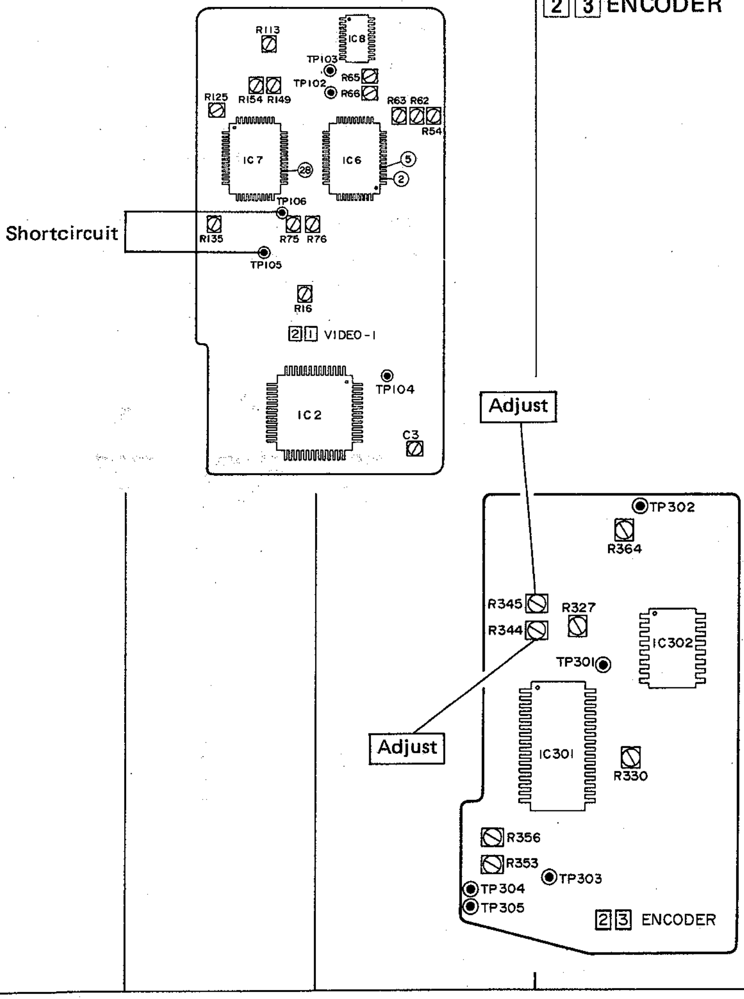
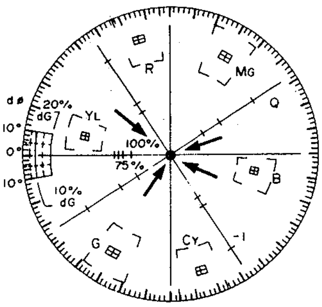

Test point
R113
IC8
TP103
R65
TP102
R66
Adjust
R125
R154 R149
R63 R62
R54
Test point
IC7
28
IC6
5
2
Adjust
TP106
R135
R75 R76
GND
TP105
R16
2 1 VIDEO-1
TP104
IC2
C3

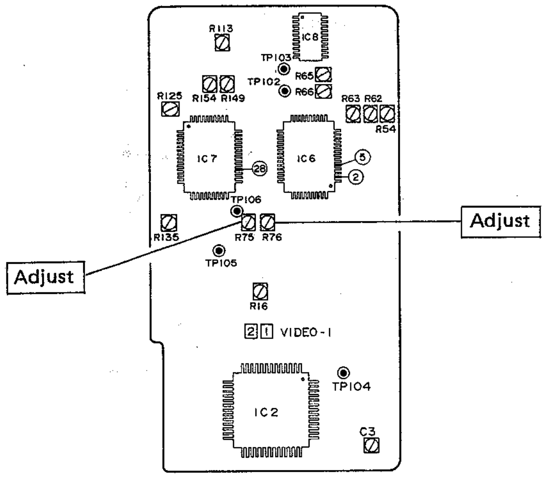
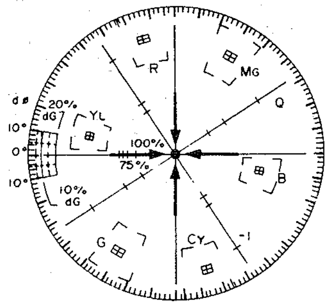
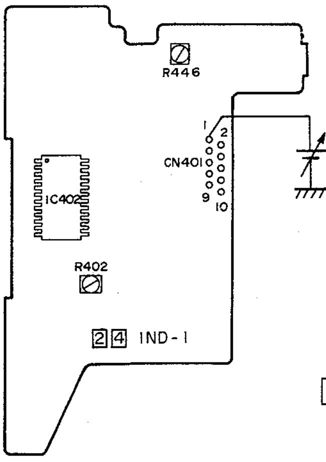
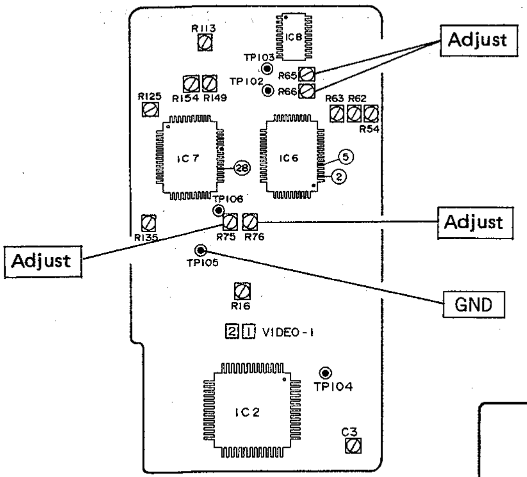
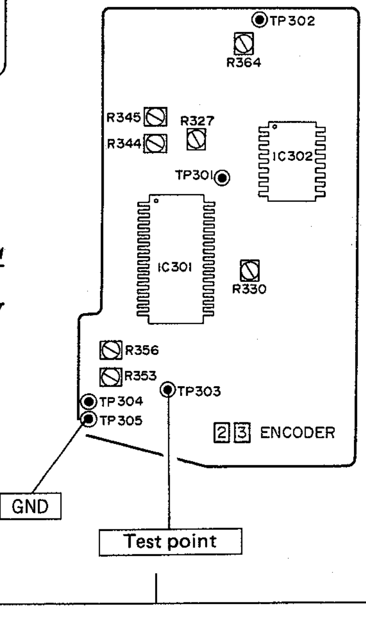
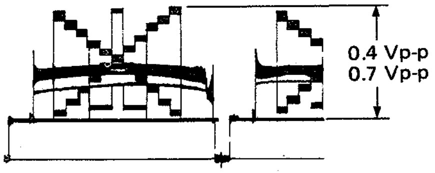
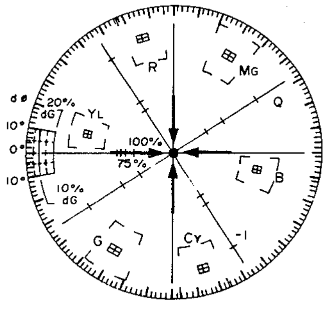

TP302
R364
R345
R327
R344
IC302
TP301
IC301
R330
R356
R353
TP303
TP304
TP305
GND
2 3 ENCODER
SYNC

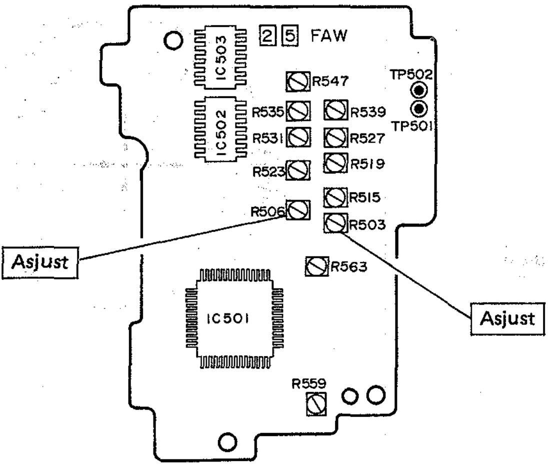
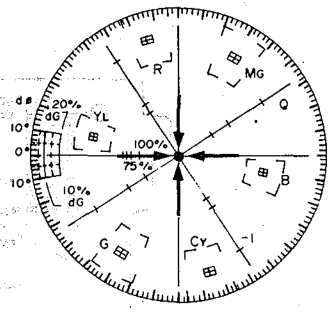
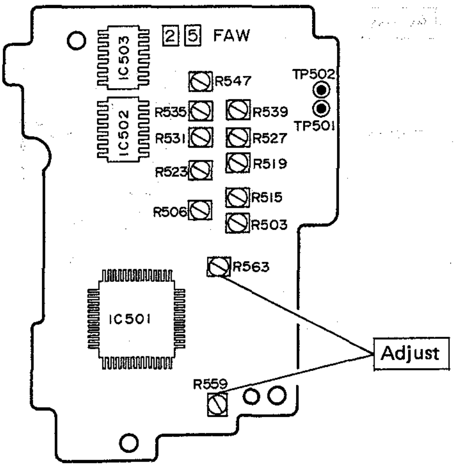
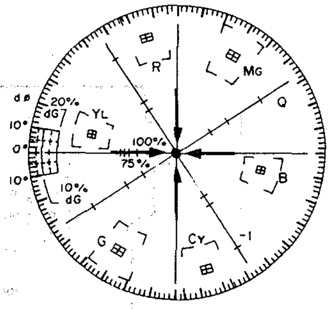


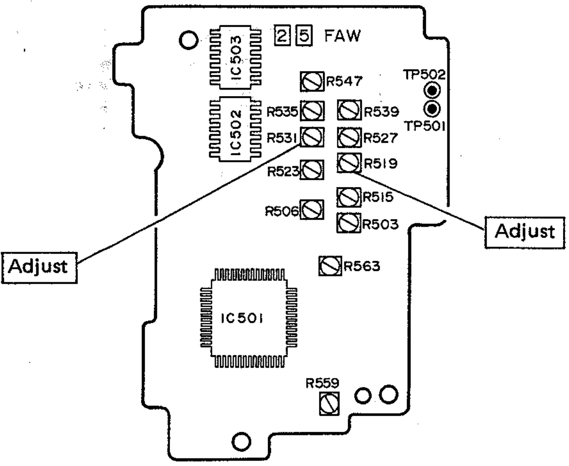
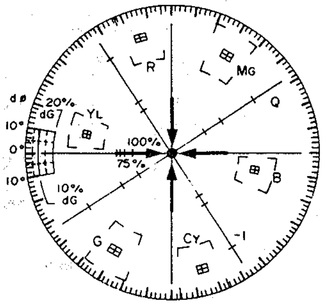
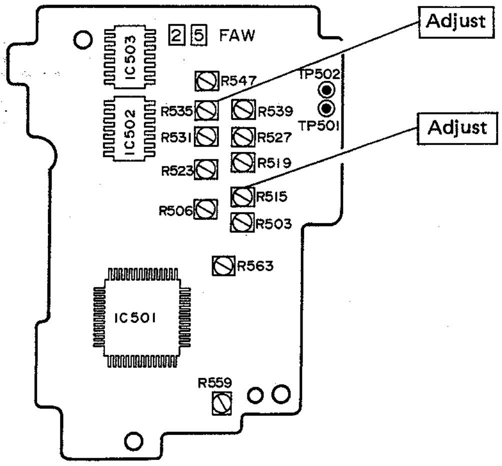
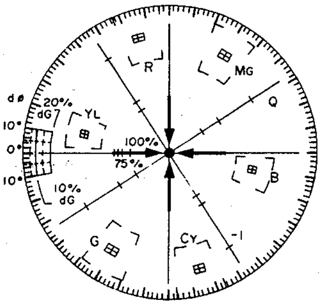

Adjust
R113
IC8
TP103
R65
TP102
R66
R125
R154 R149
R63 R62
R54
IC7
28
IC6
5
2
TP106
R135
R75 R76
TP105
R16
2 1 VIDEO-1
TP104
IC2
C3

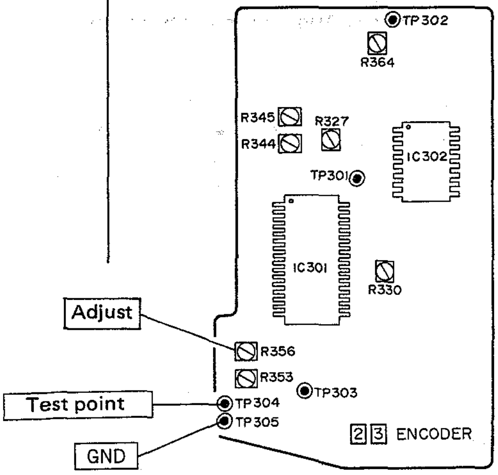
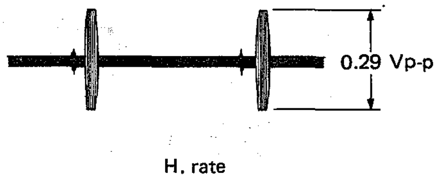
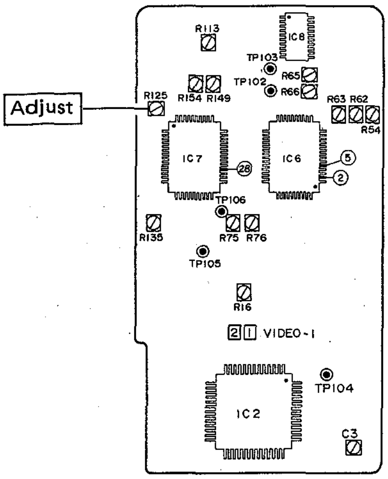
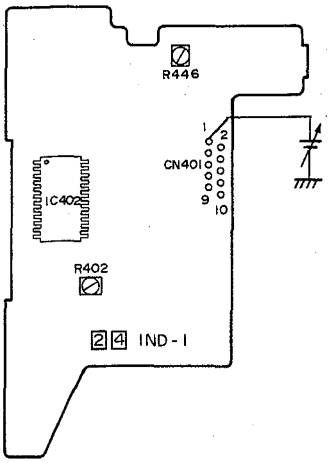
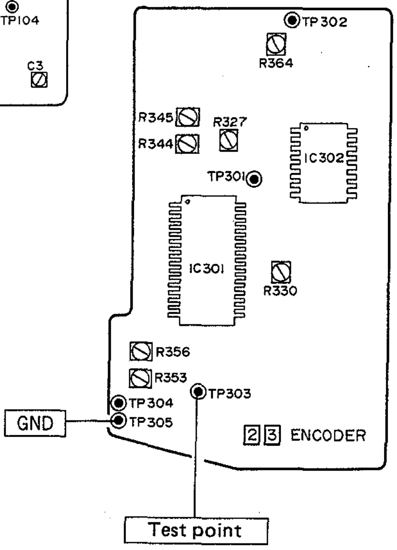
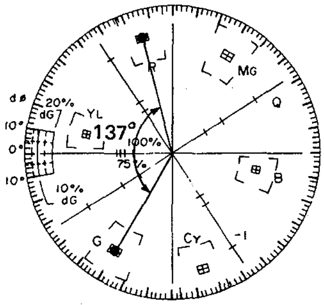

R
MG
Q
dφ
20%
dG
YL
10°
0°
100%
75%
10°
10%
dG
B
G
CY
-I

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
9	Color difference balance	• Rehearsal mode • Color bars  Adjust R113 IC8 TP103 TP102 R65 R66 R125 R154 R149 R63 R62 R54 IC7 IC6 28 5 2 TP106 R135 R75 R76 TP105 R16 2 1 VIDEO-1 TP104 IC2 C3	Vectorscope	R154 (CD BALANCE) 2 1 VIDEO-1	1) Pick up the color bars chart. 2) By use of a vectorscope, adjust R154 so that dots are positioned at the same point being into one (to minimize the red signal's movement).  R MG Q dθ 20% dG YL 10° 0° 10° 100% 75% B 10% dG G CY -I
10	Carrier balance	• Rehearsal mode • Lens: closed  Shortcircuit R113 IC8 TP103 TP102 R65 R66 R125 R154 R149 R63 R62 R54 IC7 IC6 28 5 2 TP106 R135 R75 R76 TP105 R16 2 1 VIDEO-1 TP104 IC2 C3 Adjust TP302 R364 R345 R327 R344 IC302 TP301 Adjust IC301 R330 R356 R353 TP303 TP304 TP305 2 3 ENCODER	Vectorscope	R344 (R CARR BAL) R345 (B CARR BAL) 2 3 ENCODER	1) Cap the lens. 2) Connect a wire to TP106 and GND. 3) Adjust R344 and R345 so that dots are positioned at the center of the vectorscope. 4) Disconnec tthe wire from GND.  R MG Q dθ 20% dG YL 10° 0° 10° 100% 75% B 10% dG G CY -I

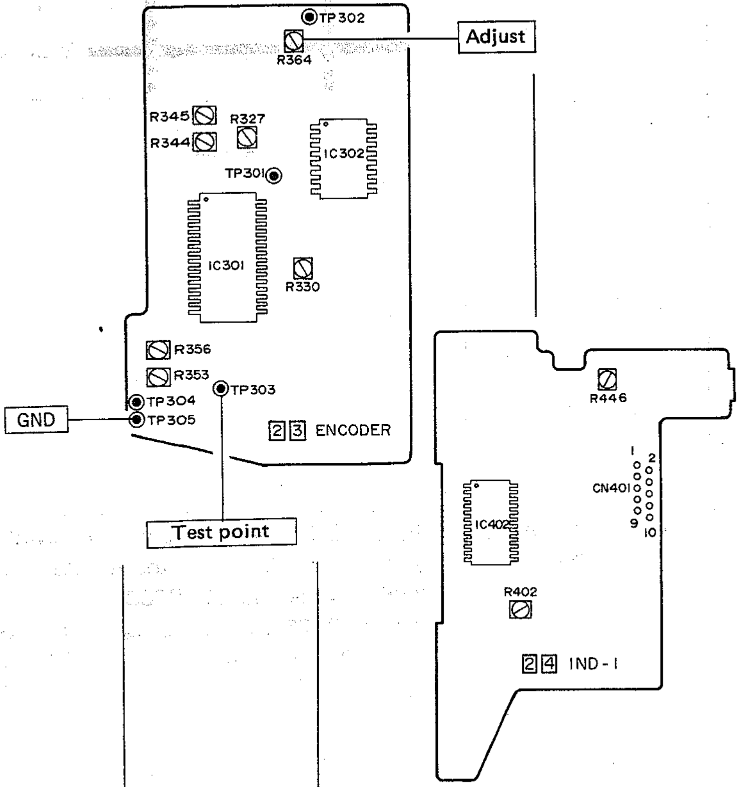
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
11	R/B setup	• Rehearsal mode • Lens: closed	Vectorscope  R113 IC8 TP103 TP102 R65 R66 R125 R154 R149 R63 R62 R54 IC7 IC6 28 5 2 TP106 R135 R75 R76 TP105 Adjust Adjust R16 2 1 VIDEO-1 TP104 IC2 C3	R75 (R SETUP) R76 (B SETUP) 2 1 VIDEO-1	1) Cap the lens. 2) Adjust R75 and R76 alternately to position dots at the center of the vectorscope screen.  R MG YL Q 20% dG 10° 0° 10° dφ 100% 75% 10% dG B G CY -I
12	Preset INDOOR  R446 CN401 1 2 9 10 IC402 R402 2 4 IND-1	• Rehearsal mode • Grey scale	Vectorscope  R113 IC8 TP103 TP102 R65 R66 R125 R154 R149 R63 R62 R54 IC7 IC6 28 5 2 TP106 R135 R75 R76 TP105 Adjust Adjust Adjust GND R16 2 1 VIDEO-1 TP104 IC2 C3	R65 (R GAIN) R66 (B GAIN) R75 (R SETUP) R76 (B SETUP) 2 1 VIDEO-1  TP302 R364 R345 R327 R344 IC302 TP301 IC301 R330 R356 R353 TP304 TP305 TP303 2 3 ENCODER GND Test point	1) Pick up the grey scale pattern. 2) With DC voltage being supplied to pin 1 of CN401 perform fine control of the DC voltage so that signal level at TP303 becomes 0.4 V. 3) Adjust R75 and R76 so that dots are positioned at the center of the vectorscope screen. 4) In the same manner as the above step 2), adjust the DC voltage to obtain 0.7 V as the signal level. 5) Adjust R65 and R66 to position dots at the center of the vectorscope screen. 6) Repeat the above steps 2) through 5) to obtain satisfactory results for all the items.  0.4 Vp-p 0.7 Vp-p  R MG YL Q 20% dG 10° 0° 10° dφ 100% 75% 10% dG B G CY -I

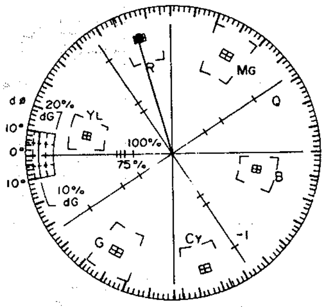
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
13	Auto white INDOOR	• Rehearsal mode • Auto white mode • Grey scale	Vectorscope	R503 (AW INDOOR B) R506 (AW INDOOR R) 2 5 FAW  IC503 IC502 2 5 FAW R547 TP502 R535 R539 TP501 R531 R527 R523 R519 R515 R506 R503 R563 IC501 R559 Asjust Asjust	1) Pick up the grey scale pattern. 2) Adjust R503 and R506 alternately to position dots at the center of the vecotscope screen.  R MG YL Q B G CY -I dB 20% dG 10° 0° 10° 100% 75% 10% dG
14	Auto white OUT-DOOR	• Rehearsal mode • Auto white mode • Grey scale	Vectorscope	R559 (AW OUT-DOOR B) R563 (AW OUT-DOOR R)  IC503 IC502 2 5 FAW R547 TP502 R535 R539 TP501 R531 R527 R523 R519 R515 R506 R503 R563 IC501 R559 Adjust	1) Attach C12 filter to the lens and C14 filter to the sensor, and pick up the grey scale. 2) Adjust R559 and R563 alternately to position dots at the center of the vectorscope screen.  R MG YL Q B G CY -I dB 20% dG 10° 0° 10° 100% 75% 10% dG

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
15	OUT-DOOR limiter	• Rehearsal mode • Auto white mode • Grey scale  IC503 2 5 FAW R547 TP502 IC502 R535 R539 R531 R527 TP501 R523 R519 R515 R506 R503 Adjust Adjust R563 IC501 R559	Vectorscope	R519 (AW OUT R LIM) R531 (AW OUT B LIM) 2 5 FAW	1) With cold filters attached to the lens (C16 filter) and to the sensor (C24 filter), pick up the grey scale pattern. 2) Adjust R519 and R531 to position dots at the center of the vectorscope screen.  R MG Q dφ 20% dG YL 10° 0° 10° 100% 75% B 10% dG G CY -I
16	INPUT limiter	• Rehearsal mode • Auto white mode • Grey scale  Adjust IC503 2 5 FAW R547 TP502 IC502 R535 R539 Adjust R531 R527 TP501 R523 R519 R515 R506 R503 R563 IC501 R559	Vectorscope	R515 (AW IN R LIM) R535 (AW IN B LIM) 2 5 FAW	1) With amber filters attached to the lens (W4 filter) to the lens and to the sensor (W14), pick up the grey scale pattern. 2) Adjust R515 and R535 to position dots at the center of the vectorscope screen.  R MG Q dφ 20% dG YL 10° 0° 10° 100% 75% B 10% dG G CY -I

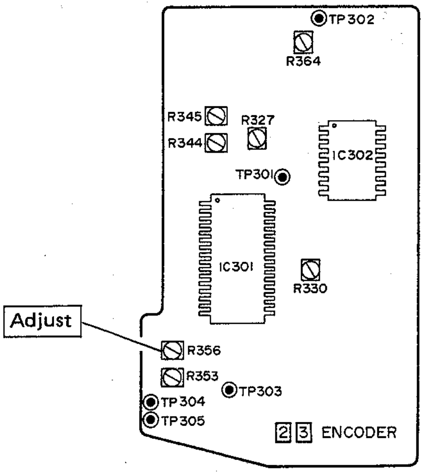
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
17	Burst level	• Rehearsal mode	TP304 (COLOR OUT)  TP302 R364 R345 R327 R344 IC302 TP301 IC301 R330 Adjust R356 R353 TP303 Test point TP304 TP305 GND 2 3 ENCODER	R353 (BURST LEVEL) 2 3 ENCODER	1) Adjust R353 so that color burst signal level at TP304 becomes 0.29 Vp-p.  0.29 Vp-p H. rate
18	B-Y gain	• Rehearsal mode • Color bars	Vectorscope  Adjust R113 IC8 TP103 TP102 R65 R66 R125 R154 R149 R63 R62 R54 IC7 IC6 28 5 2 TP106 R135 R75 R76 TP105 R16 2 1 VIDEO-1 TP104 IC2 C3  R446 1 2 CN401 9 10 IC402 R402 2 4 IND-1  TP302 R364 R345 R327 R344 IC302 TP301 IC301 R330 R356 R353 TP303 TP304 TP305 GND 2 3 ENCODER Test point	R125 (B-Y GAIN) 2 1 VIDEO-1	1) Supply DC voltage to pin 1 of CN401 and perform fine control of the voltage to obtain 0.65 V as the level at TP303. 2) Adjust R125 so that phase difference between R and G becomes nearly 137° on the vectorscope screen.  R MG Q dφ 20% dG YL 137° 10° 0° 10° 100% 75% 10% dG B G CY -I

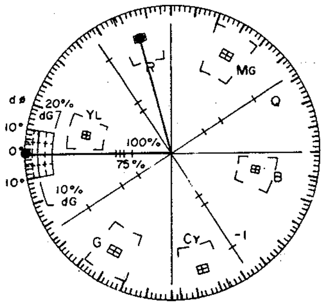
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
19	Burst phase	• Rehearsal mode • Color bars	Vectorscope	R364 (BURST PHASE) 2 3 ENCODER	1) Supply DC voltage to pin 1 of CN401 and perform fine control of the voltage to obtain 0.65 V as the level at TP303. 2) Adjust R364 so that phase of R becomes nearly 104° on the vectorscope screen.

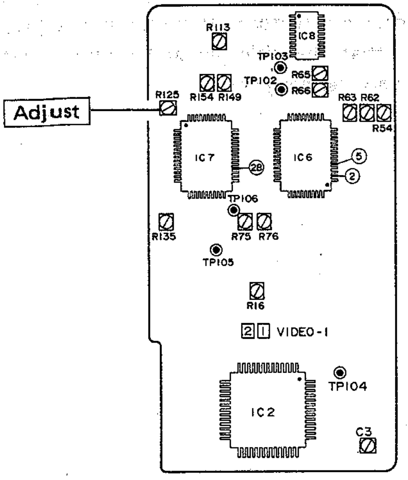
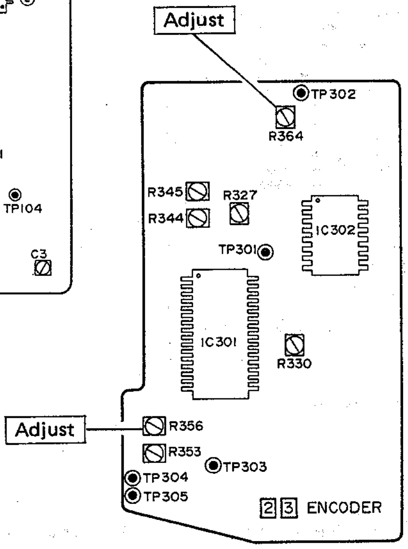
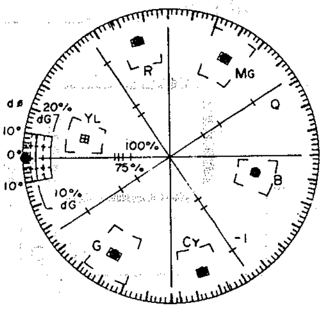
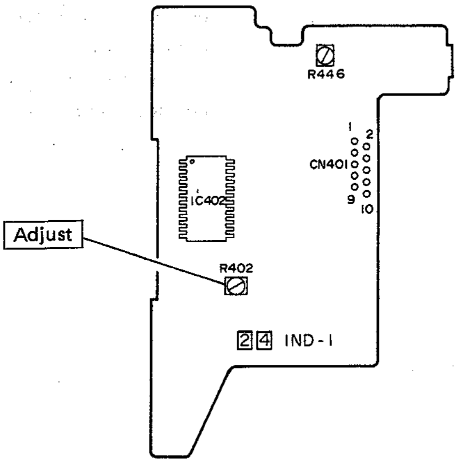

TP302
R364
Adjust
R345
R327
R344
IC302
TP301
IC301
R330
R356
R353
TP303
TP304
TP305
GND
2 3 ENCODER
Test point
R446
CN401
1
2
9
10
IC402
R402
2 4 IND-1

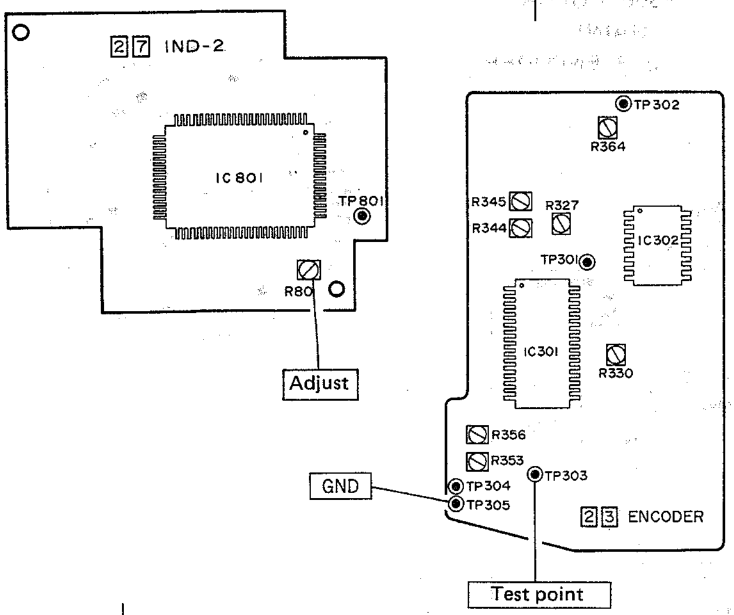
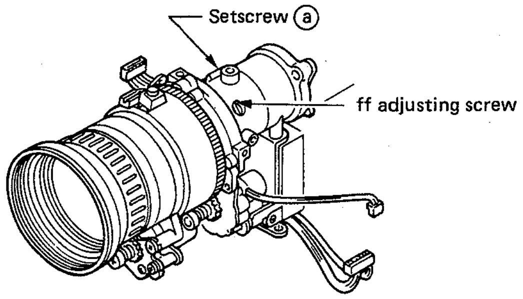

dB
20%
dG
10°
0°
10°
YL
100%
75%
10%
dG
R
MG
Q
B
-I
CY
G

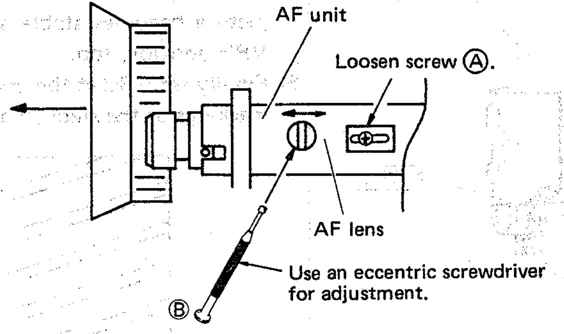
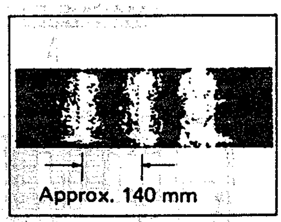
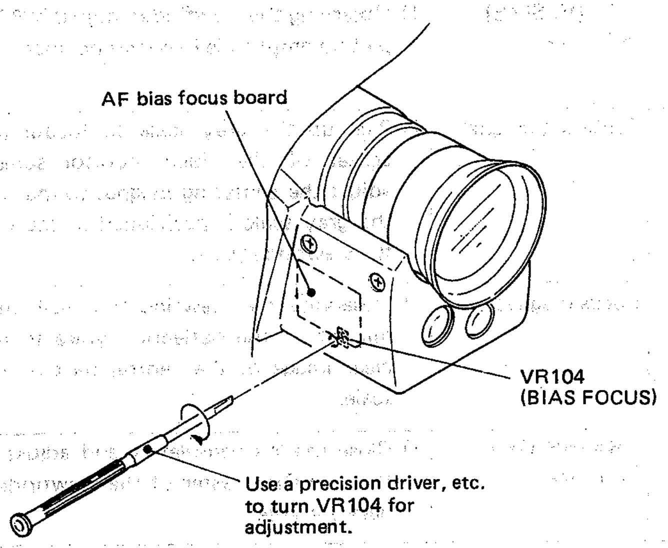
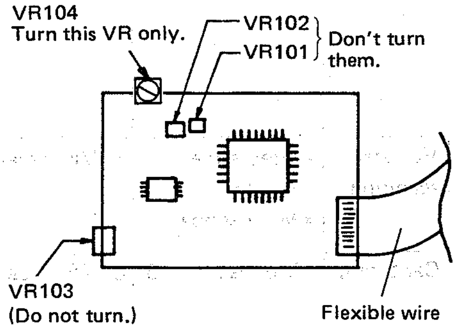
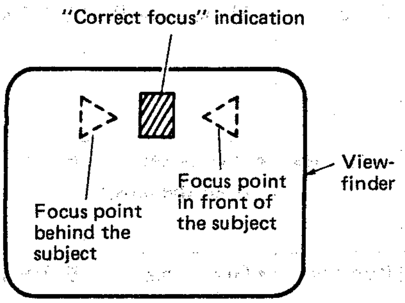
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
20	Color gain	• Rehearsal mode • Color bars	Vectorscope	R356 (COLOR GAIN) 2 3 ENCODER	1) Adjust the gain control of the vectorscope to set burst level for the outer rim of the vectorscope indicator. 2) Adjust R356 so that the vectorscope reads R level at the center of the ⊞ mark of the indicator.


TP302
R364
R345
R327
R344
IC302
TP301
IC301
R330
Adjust
R356
R353
TP303
TP304
TP305
2 3 ENCODER

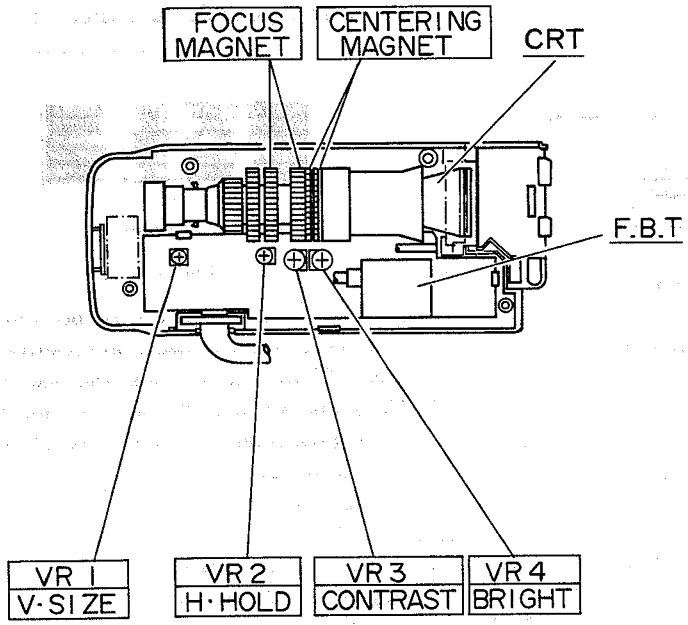
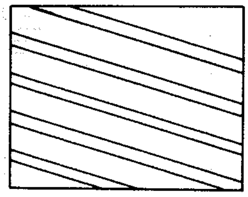
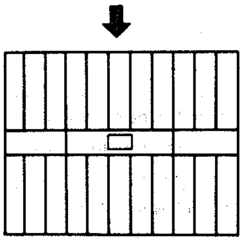

dB
20%
dG
10°
0
10°
YL
100%
75%
10%
dG
R
MG
Q
B
-I
CY
G

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
21	Fine adjustment of Color factors	• Rehearsal mode • Color bars	Vectorscope  Adjust R113 IC8 TP103 TP102 R65 R66 R125 R154 R149 R63 R62 R54 IC7 IC6 28 5 2 TP106 R135 R75 R76 TP105 R16 2 1 VIDEO-1 TP104 IC2 C3  Adjust TP302 R364 R345 R327 R344 IC302 TP301 IC301 R330 Adjust R356 R353 TP303 TP304 TP305 2 3 ENCODER	R125 (B-Y GAIN) 2 1 VIDEO-1 R364 (BURST PHASE) R356 (COLOR GAIN) 2 3 ENCODER	1) Adjust R125, R364 and R356 so that the dot of every color is positioned in the outer frame of the ⊞ mark being balanced with each other.  R MG Q dθ 20% dG YL 10° 0° 10° 100% 75% B 10% dG G CY -I
22	Indicator adjustment	• Rehearsal mode • Lens: closed • Manual focus	Electronic viewfinder  R446 1 2 CN401 9 10 IC402 Adjust R402 2 4 IND-1	R402 (IND OSC) 2 4 IND-1	1) Turn the focus ring to display the "correct focus" indication in the electronic viewfinder. 2) Adjust R402 to position the "correct focus" indication in the center of the viewfinder screen.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
23	Title indication width	• Rehearsal mode • Lens: closed	Monitor TV TP303 (Y OUT) $\boxed{2}\boxed{3}$ ENCODER  $\boxed{2}\boxed{7}$ IND-2 IC801 TP801 R80 Adjust GND TP302 R364 R345 R344 R327 IC302 TP301 IC301 R330 R356 R353 TP304 TP305 TP303 $\boxed{2}\boxed{3}$ ENCODER Test point	R801 (TITLE OSC) $\boxed{2}\boxed{7}$ IND-2	1) Close the lens with the lens cap and press the TITLE MEMORY button. 2) Remove the lens cap and shoot an optional camera object. 3) Connect the oscilloscope to TP303 to observe waveform at H-rate and adjust R801 so that the title signal coincides with the video scanning period.
24	Back focus	• Camera object in the distance of 15 m or far apart • Iris: fully open (with ND filter) • Manual focus	(on video monitor)  Setscrew ⓐ ff adjusting screw	Master lens	1) Attach proper ND filter to open the iris fully and set the focus ring to the "∞" position. 2) Loosen the setscrew ⓐ and turn the ff adjusting screw to bring into focus on the video monitor. 3) Set the zoom lens to the "54" position of the graduation and confirm that the subject is in focus. 4) Turn the focus ring to the "2 m" position and shoot an object in the distance of 2 m. In this state, confirm that the subject is in focus with the zoom lens is set to "54" and "9" positions. 5) Tighten the setscrew ⓐ and lock the back focus adjusting screw.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
25	Auto focus	•Camera object in the distance of 2 m •Auto focus chart •Iris: open  AF unit Loosen screw Ⓐ. AF lens Use an eccentric screwdriver for adjustment. Ⓑ Fig. 2	(on video monitor)	AF lens	**Note:** Before proceeding to this adjustment, confirm that the back focus is correctly adjusted. 1) Set up the camera and the auto focus chart so that the distance between the chart and the lens is 2 m. 2) Tilt the auto focus chart by lifting its left side at an angle of 20° and shoot it.  Approx. 140 mm Fig. 1 3) Loosen the screw Ⓐ on the bottom of the auto focus unit and insert an eccentric screwdriver Ⓑ into the AF lens hole (see Fig. 2). 4) Move the AF lens to the front and rear by turning the eccentric screwdriver to bring the chart into focus. 5) Tighten the screw Ⓐ.
26	Bias focus	•Camera object in the distance of 2 m •Focus SW: MANUAL •Auto focus chart •Iris: open  AF bias focus board VR104 (BIAS FOCUS) Use a precision driver, etc. to turn VR104 for adjustment. Fig. 5	(on video monitor) "Correct focus" indication in E. VF	VR104 (BIAS FOCUS) [AUTO FOCUS]	1) Focus the main lens. 2) Adjust VR104 so that the "correct focus" indication appears in the E. VF screen.  VR104 Turn this VR only. VR102 VR101 Don't turn them. VR103 (Do not turn.) Flexible wire Fig. 3  "Correct focus" indication Focus point behind the subject Focus point in front of the subject View-finder Fig. 4

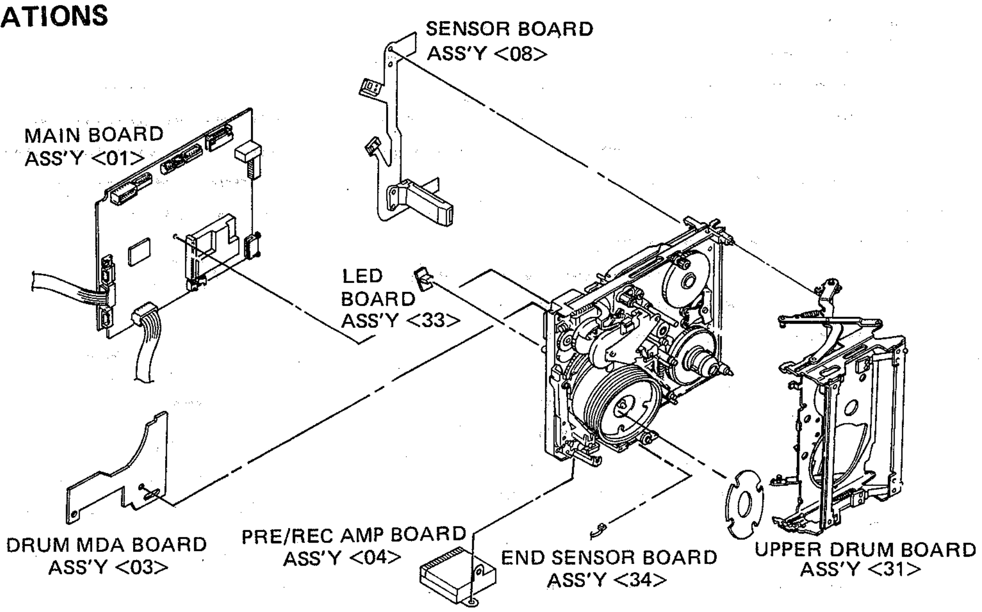
3.8 E. VF (ELECTRONIC VIEWFINDER) ADJUSTMENT

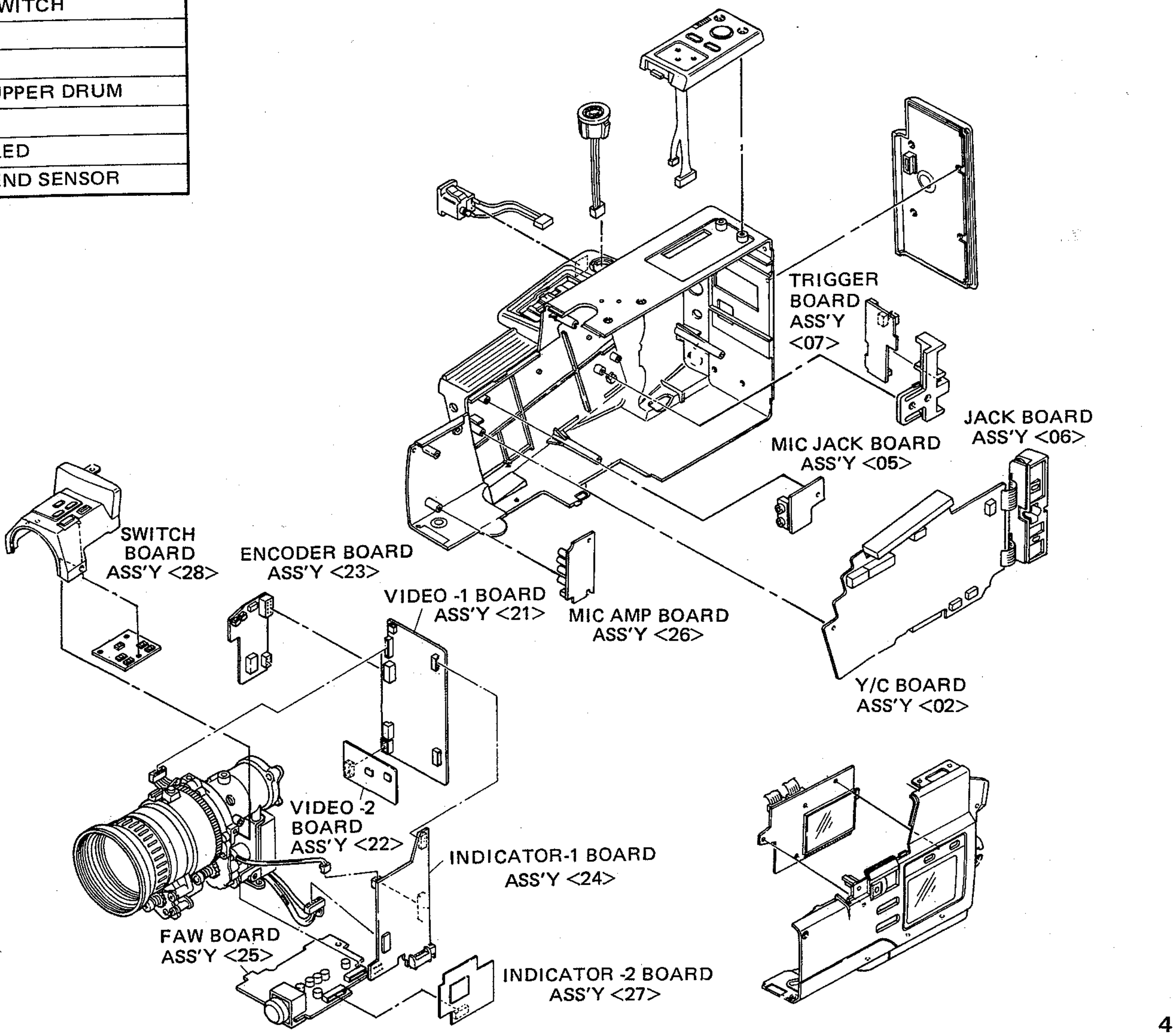
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	Horizontal sync.  FOCUS MAGNET CENTERING MAGNET CRT F.B.T VR 1 V·SIZE VR 2 H·HOLD VR 3 CONTRAST VR 4 BRIGHT	• Grey scale or • Monoscope	E. VF screen	VR2 (H. HOLD) 5 0 VF	1) Observing the viewfinder screen, turn VR2 fully clockwise to make picture unstable. 2) Gradually turn VR2 counterclockwise until the picture becomes stable. When the image is completely stabilized, mark the VR's position for future reference. 3) Again, turn VR2 fully counterclockwise to make the picture unstable. 4) Gradually return VR2 clockwise until the picture becomes stable again, and mark the VR's position, too. 5) Finally set VR2 at the midpoint between the markings of the steps 2) and 4).  (a)  (b) **Note:** At the proper set position of VR2, voltage of IC1 pin 12 is to be 3.0 V DC.
2	Vertical scanning	• Grey scale or • Monoscope	E. VF screen	VR1 (V. SIZE) 5 0 VF	1) Observing the viewfinder, adjust VR1 so that picture amplitude becomes normal.
3	Centering	• Monoscope PB	E. VF screen	Centering magnet	1) Pick up the grey scale to locate it in the center of the video monitor screen, and adjust the centering magnet so that image of the grey scale is positioned in the center of the viewfinder screen.
4	Focus	• Monoscope PB	E. VF screen	Focus magnet	1) Observing the viewfinder, adjust the focus magnet of the deflection yoke to obtain a clear image of the central part of the grey scale.
5	Brightness	• Iris: closed (Cap the lens.)	E. VF screen	VR4 (BRIGHT) 5 0 VF	1) Close the iris completely and adjust VR4 so that the CRT raster of the viewfinder is just barely visible.
6	Contrast	• Grey scale	E. VF screen	VR3 (CONT) 5 0 VF	1) Observing image of the viewfinder, adjust VR3 to obtain the best gradation of the grey scale patterns.

SECTION 4
DIAGRAMS AND CIRCUIT BOARDS

4.1 CIRCUIT BOARD LOCATIONS

No.	PWB NAME
01	MAIN
02	Y/C
03	DRUM MDA
04	PRE/REC AMP
05	MIC JACK
06	JACK
07	TRIGGER
08	SENSOR
21	VIDEO-1
22	VIDEO-2
23	ENCODER
24	INDICATOR-1
25	FAW
26	MIC AMP
27	INDICATOR-2
28	SWITCH
31	UPPER DRUM
33	LED
34	END SENSOR


SENSOR BOARD ASS'Y <08>
MAIN BOARD ASS'Y <01>
LED BOARD ASS'Y <33>
DRUM MDA BOARD ASS'Y <03>
PRE/REC AMP BOARD ASS'Y <04>
END SENSOR BOARD ASS'Y <34>
UPPER DRUM BOARD ASS'Y <31>


TRIGGER BOARD ASS'Y <07>
JACK BOARD ASS'Y <06>
MIC JACK BOARD ASS'Y <05>
SWITCH BOARD ASS'Y <28>
ENCODER BOARD ASS'Y <23>
VIDEO -1 BOARD ASS'Y <21>
MIC AMP BOARD ASS'Y <26>
Y/C BOARD ASS'Y <02>
VIDEO -2 BOARD ASS'Y <22>
INDICATOR-1 BOARD ASS'Y <24>
FAW BOARD ASS'Y <25>
INDICATOR -2 BOARD ASS'Y <27>

4.2 SCHEMATIC DIAGRAM NOTES

1. ▨ parts are safety related parts. When replacing them, be sure to use the specified parts.

2. Voltage and waveform measurment condition

- **DECK**

Voltage : DC-measured with a digital voltmeter during recoding (SP mode) and play back (SP-mode) with alignment tape. Where voltage differ between recoding and playback, the voltage during playback is shown in parenthese. (used to Y/C separator)

Waveform :

VIDEO System; Measured with a color bar during recording (SP mode) with alignment tape. (used to Y/C separator)

AUDIO System; In REC mode, the waveform is measured with sine wave (–32 dBs, 1 kHz) supplied to pin 4 of CN9 of the MAIN board, while in PB mode, it is measured by playing back the 1 kHz segment of the alignment tape.

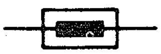
- **CAMERA**

Voltage/
Waveform : Measured as the grey scale pattern which lighted up brightly is shot in the Full-Auto mode and the Rehersal mode.

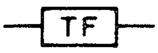
3. Unit indications

No units:[Ω] No units:[μF] No units:[μH]
K:[kΩ] P:[pF] m:[mH]
M:[MΩ]

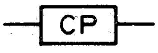
Thermistor



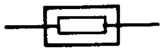
Thermal Fuse

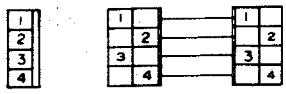


Circuit Protector

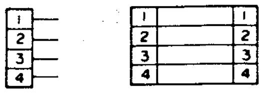


Posistor

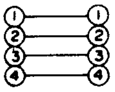




: Connector



: Board in connector

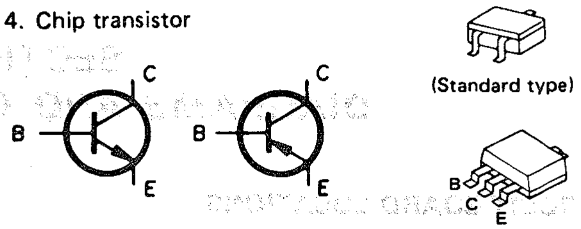


: Direct connection

COUNT UP : Active only at high.
$\overline{\text{COUNT DOWN}}$: Active only at low.

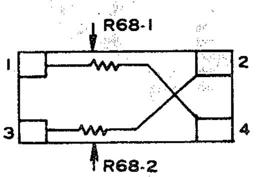
(VS) : Connected pattern in the board.
(MS) Abbreviations
V : Video M : Mechacon
(SM) S : Servo A : Audio
VS : Signal flow from video to servo.

4. Chip transistor



5. Double chip resistors

These devices contain two resistance elements of differing values. In the example shown in the figure, R68 is comprised of R68-1 between terminals 1 and 4, and R68-2 between terminals 2 and 3.

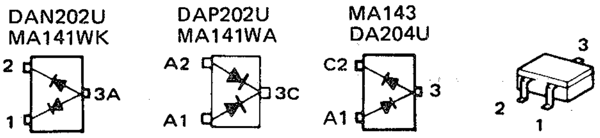


R68 PU59735-472Y103

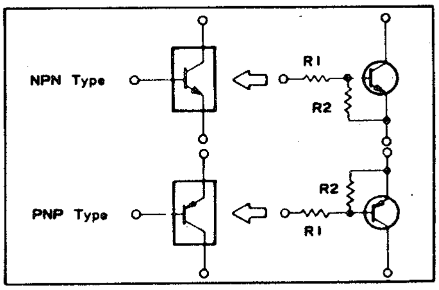
472 indicates 4.7 kΩ for R68-1
103 indicates 10 kΩ for R68-2

As can be noted from the figure, left-right reversal of the device does not change the connection values. However, turning the device upside-down will result in incorrect connectin.

6. Chip diode



7. Digital transistor



RESISTOR VALUES

JUNCTION	Part No.	R1 (kΩ)	R2 (kΩ)
PNP	DTA124EU	22	22
NPN	DTC144EU DTC124EU	47 22	47 22

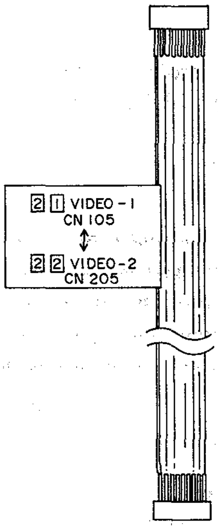
Note: The digital transistor includes built in resistors. It features small size and high reliability. Both PNP and NPN types are available.

USES: INVERTER, INTERFACE, DRIVER CIRCUITS.

8. Definition of the surface and the back of circuit board diagrams
   Front : Side on which discrete parts are assembled
   Rear : Side on which chip parts are assembled

9. Patchcords
   Patchcords are available for blue shaded portions of the overall circuit diagram.
   The patchcords are provided with tags to indicate connection points. Connect as indicated.
   Example: As shown in the Figure, connect one side to VIDEO-1 board CN105 and the other to VIDEO-2 board CN205.

10. Indication of signal flow
    Arrows printed in blue on standard circuit diagrams indicate signal flow in REC and PB modes.

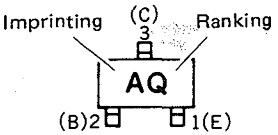
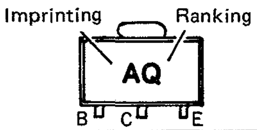
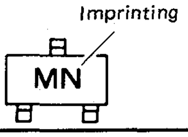


4.3 REPLACING SUBMINIATURE "CHIP" PARTS

1. Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
2. Additional compactness is achieved by using subminiature chip parts for certain circuit elements. When replacing these parts, note the cautions outlined below.

   Chip transistors and diodes used in this model are outlined as follows.

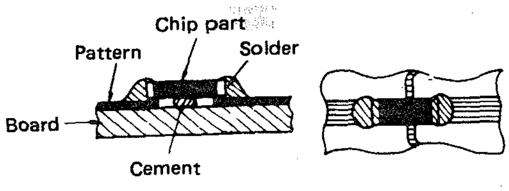
- **Chip transistor and chip diode imprinting**

Transistors				Diodes	
Type	**Imprinting**	**Type**	**Imprinting**	**Type**	**Imprinting**
DTA124EU	15	2SB798	DM, DL, DK	DAN202U	N
DTA144EU	26	2SC2412K(S)	BS	DAP202K	P
DTC124EU	25	2SC3931	UB~UD	DAP202U	P
DTC144EU	26	2SC3936(BC)	KB, KC	DA204U	D14
FMC2	C2	2SC4081	BQ~QS	FMN1	N1
FMG1	G1	2SC4098(PQ)	AP, AQ	IMN10	N10
FMG2	G2	2SC4099(NP)	JN, JP	MA141WA	MN
FMU1	U1	2SC4176	B33, B34, B35	MA141WK	MT
FMW1	W1	2SC4177(56)	L5, L6	MA143	MC
FMW3	W3	2SC4178(34)	F13, F14	MA3075H	7.5H
2SA1036K	HP~HR	2SD1819	YQ~YS	MA704	MIK
2SA1532(BC)	EB, EC	2SJ146	4D	MA714	MIP
2SA1576	FQ, FR	2SK198P,Q	10P, 10Q	MA716	M1U
2SA1577	HQ~HS	2SK620	3N	RD7.5M-T1B2	752
2SA1610	Y33, Y34	2SK665	30	RD7.5MB3	753
2SA1611(56)	M5, M6	3SK179	V03	RD8.2MB2	822
2SB1218(RS)	AR, AS				
2SB624	BV4				
					

3. Required tools:
   1) Fine tipped, well insulated soldering "pencil" (with absorbent) (Temp : 130°C ~ 260°C).
   2) Tweezers
   3) Blower type hair dryer.

4. Soldering cautions:
   1) Do not apply heat for more than 3 seconds.
   2) Avoid using a rubbing stroke when soldering.
   3) Discard removed chips; do not reuse them.
   4) Supplementary cementing is not required.
   5) Use care not to scratch or otherwise damage the chips.

5. Soldering conditions:
   1) Resistors, capacitors, etc.



   2) Transistors, diodes, etc.

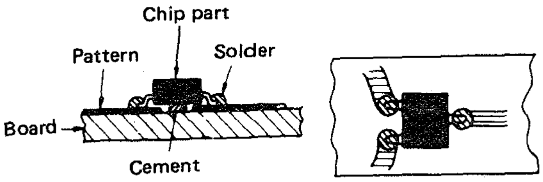


Fig. 4-2

6. Removal (resistors, capacitors, etc.):
   1) Grasp the part with repair jig and melt the solder at one side.

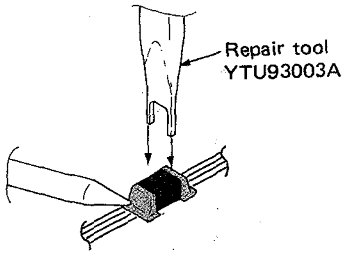


Fig. 4-3

   2) Melt the solder at the other side and remove the part with a twisting motion.

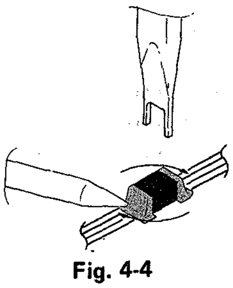


Fig. 4-4

7. Removal (transistors, diodes, etc.):
   1) Melt the solder of one lead.

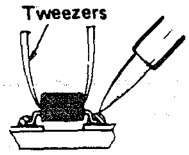


Fig. 4-5

   2) Lift the side of that lead upward.

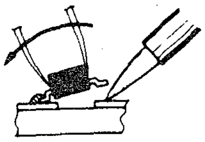


Fig. 4-6

   3) Simultaneously heat solder of the two remaining leads and lift part to remove.

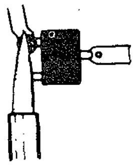


Fig. 4-7

8. Preheating (except for semiconductors):
   Immediately before installing new resistors or capacitors, use a blower type hair dryer and preheat the part for about two minutes at approximately 150°C.

9. Replacement:
   1) Presolder the contact points of the circuit pattern.

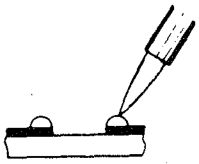


Fig. 4-8

   2) Press the part downward with repair jig and apply the soldering pencil as indicated in the figure.

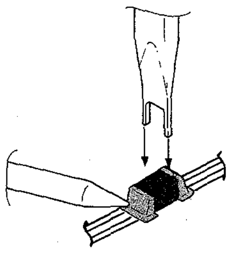


Fig. 4-9

4.4 KEY TO ABBREVIATIONS

A	AC	Alternating Current
	ACC	Automatic Color Control
	A/CTL	Audio/Control
	ADC	Analog to Digital Converter
	ADD	Adder
	ADJ	Adjustment
	AE	Audio Erase
	AEF	Automatic Editing Function
	AF	**Auto Focus**
	AFC	Automatic Frequency Control
	AFT	Automatic Fine Tuning
	AGC	Automatic Gain Control
	AH	Audio Head
	AL	**After Loading, Allways**
	ALC	Automatic Light Compensation Automatic Level Control
	ALM	Alarm
	ALU	Arithmetic Logic Unit
	AM	Amplitude Modulation
	AMP	Amplifier
	ANT	Antenna
	APC	Automatic Pedestal Control Automatic Phase Control
	APL	Average Picture Level
	A/S/M	Audio/Servo/Mechacon
	ASS'Y	Assembly
	ATT	Attenuator
	AUD	Audio
	AUTO	Automatic
	AUX	Auxiliary
B	B	**Base, Blue**
	BAL	Balance
	BATT	Battery
	BBD	Bucket Brigade Device
	BCD	Binary Coded Decimal
	BEG	Beginning
	BF	**Behind Focus**
	BFP	Burst Flag Pulse
	BPF	**Band Pass Filter**
	BIT	Binary Digit
	BLK	Black, Blanking
	BLU	Blue
	BNC	Bayonet Connector
	BOT	Beginning of Tape
	BPF	Bandpass Filter
	BRK	Brake
	BRN	Brown
	BRT	Brightness
	BT	Band Tuning
	BUFF	Buffer
	BW or B/W	Black and White
C	C	**Capacitance, Collector, Color, Character**
	CA	**Camera**
	CAL	Calibration
	CAP	Capstan, Capacitor
	CAR	Carrier
	CARR	Carrier
	CASS	Cassette
	CC	Cassette Compartment
	CCD	Charge Coupled Device
	CCT	Circuit
	CdS	Cadmium Sulphide
	CD	Count Down
	CE	Chip Enable
	CF	**Ceramic Filter, Color Frame, Correct Focus**
	CH	Channel
	CHG	Charge
	CHROMA	Chrominance
	CLK	Clock
	CLR	Clear
	CMD	Command
	CMOS	Complementary Metal Oxide Semiconductor
	CNT	Count, Counter
	COL	Color
	COM	Common
	COMB	Combination Comb Filter
	COMP	Comparator Composite Compensation
	CONN	Connector
	CONV	Converter
	CP	Circuit Protector Clamp Pulse
	CPC	Capstan Phase Control
	CPU	Central Processing Unit
	CTC	Crosstalk Cancel
	CTL	Control
D	D	Drum, Digital, Diode, Drain
	DAC	Digital to Analog Converter
	dB	Decibel
	DC	Direct Current
	DD	Direct Drive
	DEC	Decoder
	DEMOD	Demodulator
	DEMUX	Demultiplexer
	DET	Detector
	DEV	Deviation
	DFRS	Drum Free Running Stop
	DG	Differential Gain
	DIF	Differential
	DISCR	Discriminator
	DL	Delay Line
	DOC	Dropout Compensator
	DOD	Drop Out Detector
	DP	Differential Phase
	DPC	Drum Phase Control
	DYAC	Dynamic Aperture Control
E	E	Edit, Emitter
	EDP	Electronic Data Processing
	E-E	Electric to Electric
	EF	Emitter-Follower
	EMP	Emphasis
	EN	Enable
	ENC	Encoder
	ENV	Envelope
	EOT	End of Tape
	EP	Extended Play
	EQ	Equalizer
	ES	Electronic Switch
	ESNS	End Sensor
	EXP	Expander
	EXT	External
F	F	Farad, Fuse
	F ADV	Frame Advance
	FDP	Fluorescent Display Panel
	FE	Full Erase
	FET	Field Effect Transistor
	FF	**Fast Forward, Front Focus** Flipflop
	FG	Frequency Generator
	FM	Frequency Modulation
	FR	Full Recording, Frame, Fusible Resistor
	FREQ	Frequency
	F-V CONV	Frequency to Voltage Converter
	FWD	Forward
	FWD S	Forward Search
G	G	Green, Gate, Grid
	GEN	Generator
	GND	Ground
	GRN	Green
	GRY	Gray
H	H	High, Henry, Hour
	HBF	Horizontal Burst Flag
	HD	Horizontal Drive
	HPF	Highpass Filter
	Hz	Herz

I
IC : Integrated Circuit
ID : Identification (Pulse)
IF : Intermediate Frequency
IFR : Infrared
IFT : Intermediate Frequency Transformer
IND : Indicator
INH : Inhibit
INS : Insert
INT : Internal, Interrupt
INV : Inverter, Interleave
I/O : Input/Output
IR : Infrared

L
L : Low, Left
LCD : Liquid Crystal Display
LED : Light Emitting Diode
LIM : Limiter
LIN : Linearity
LLD : Low Light Detector
LOAD : Loading (Cassette)
LP : Long Play
LPF : Lowpass Filter
LSB : Lower Sideband

M
M : Motor, Mega
MAX : Maximum
MDA : Motor Drive Amplifier
MECHACON : Mechanism Control
MIC : Microphone
MIN : Minimum
MIX : Mixer, Mixing
MMV : Monostable Multivibrator
MNOS : Metal Nitride Oxide Semiconductor
MOD : Modulation, Modulator
MODEM : Modulator-Demodulator
MON : Monitor
MOS : Metal Oxide Semiconductor
MPX : Multiplexer, Multiplex
MS : Mode Select
MUT : Muting

N
NAND : Not-And
NC : Not Connected, Normally Closed
NFB : Negative Feedback
NLN : Non-Linear
NO : Normally Open
NOR : Normal, Not-Or
NR : Noise Reduction

O
OP : Operation
OPAMP : Operational Amplifier
ORG : Orange
OSC : Oscillator

P
PB : Playback
PC : Photocoupler, Pulse Counter
PCM : Pulse Code Modulation
PG : Pulse Generator
PGM : Program
PI : Photo Interrupter
PIC : Picture Control
PIF : Picture Intermediate Frequency
PLA : Programmable Logic Array
PLL : Phase Locked Loop
PNK : Pink
POS : Position
p-p : Peak-to-Peak
PR : Pinch Roller
PREAMP : Preamplifier
PRL : Preroll
P/S : Pause/Still
PSC : Pulse Swallowing Control
PU : Pickup
PUT : Programmable Unijunction Transistor
PWB : Printed Wiring Board
PWM : Pulse Width Modulation
PWR : Power

Q
Q : Quality Factor

R
R : Red, Right
RA : Resistor Array
RAM : Random Access Memory
REC : Recording
REF : Reference
REG : Regulated, Regulator
REM : Remote
REMOCON : Remote Control (Unit)
REV : Reverse
REV S : Reverse Search
REW : Rewind
RF : Radio Frequency
ROM : Read Only Memory
R/P : Record/Playback
RPT : Repeat
RS FF : RS Flipflop
RST : Reset
RT : Rotary Transformer
RUN : Running
RY : Relay

S
SAW : Sawtooth, Surface Acoustic Wave
SC : Subcarrier, Simulcast
SCH : Search
SEL : Select, Selector
SENS : Sensor
SEP : Separator
SF : Source Follower
SFF : Short Fast Forward
SIF : Sound Intermediate Frequency
SN : Signal to Noise Ratio
SOL : Solenoid
SOS : Sound on Sound
SP : Standard Play
SR : Supply Reel
SREW : Short Rewind
S/S : Slow/Still
SSG : Sync Signal Generator
SSNS : Start Sensor
STD : Strobe Data, Standard
SUP : Supply
SW : Switch
SWD : Switched
SYNC : Synchronization

T
TAL : Tally
TBC : Time Base Corrector
TC : Tension Control, Time Code
TEN : Tension
TF : Thermal Fuse
TIM : Timing
TK : Tracking
TNR : Tuner
TP : Test Point
TPZD : Trapezoid
TR : Transistor, Trimmer
TRANS : Transformer
TU : Take-up

U
UL : Unloading
UNREG : Unregulated
UNSW : Unswitched

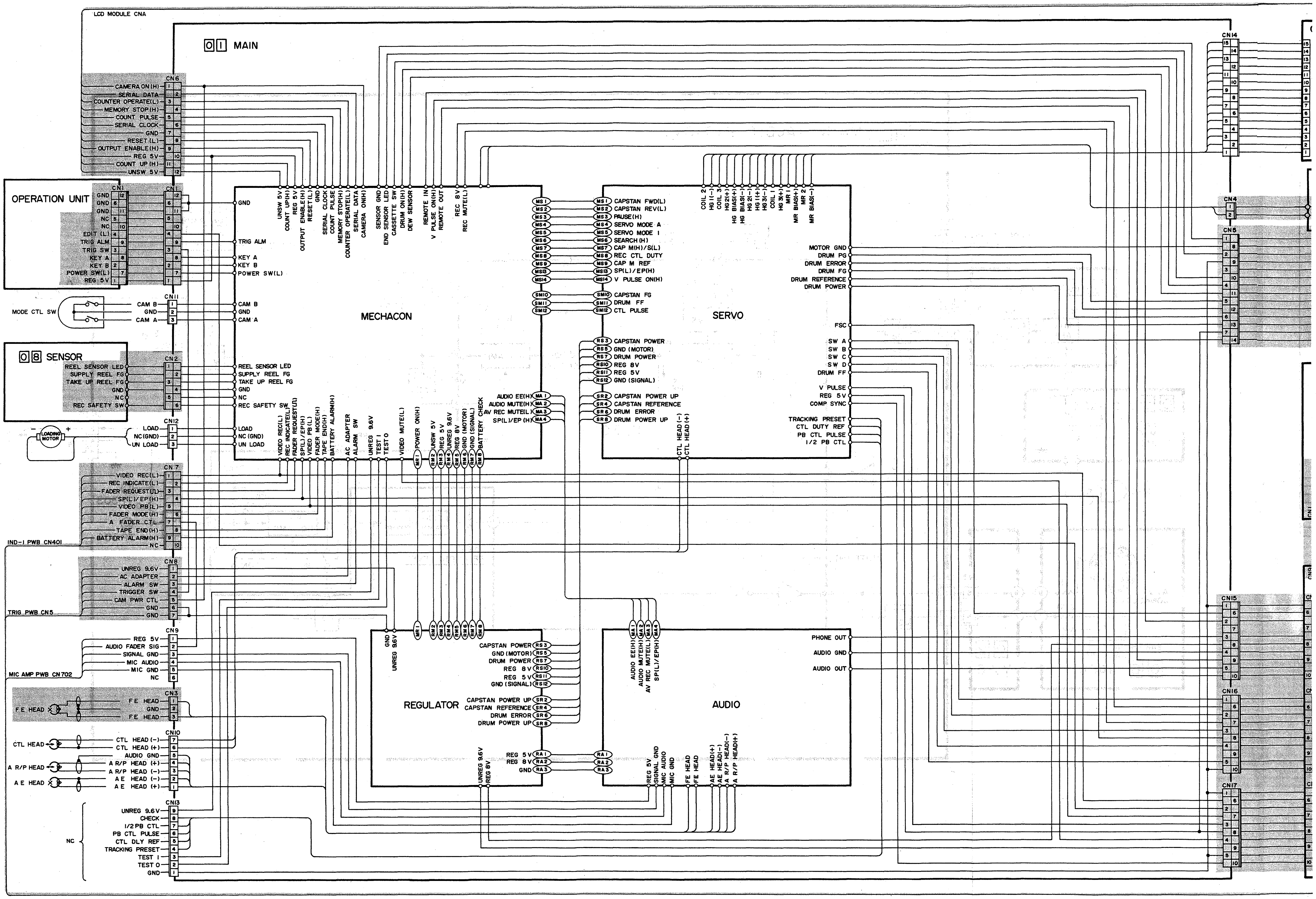
V
V : Vertical, Volt
VACT : Video Action
VCO : Voltage Controlled Oscillator
VD : Vertical Drive
VIF : Video Intermediate Frequency
VLT : Violet
VR : Variable Resistor
VS : Video and Sync
VSCH : Variable Search
VV : Video to Video
VXO : Variable Crystal Oscillator

W
W : Watt
WARN : Warning
W & D : White and Dark
WHT : White
WV : Working Voltage

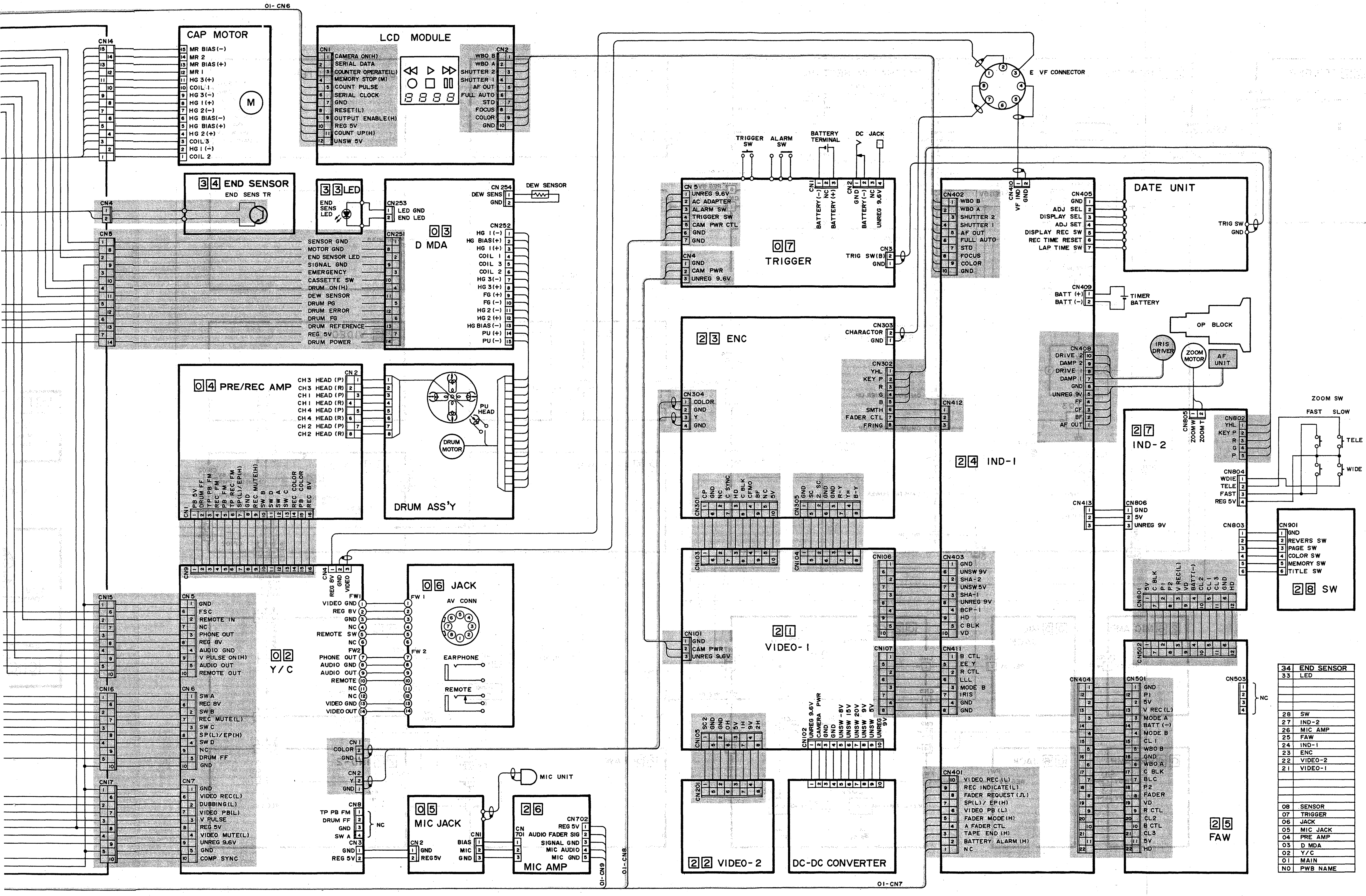
X
XTAL : Crystal

Y
Y : Luminance
YEL : Yellow

4.5 OVERALL WIRING

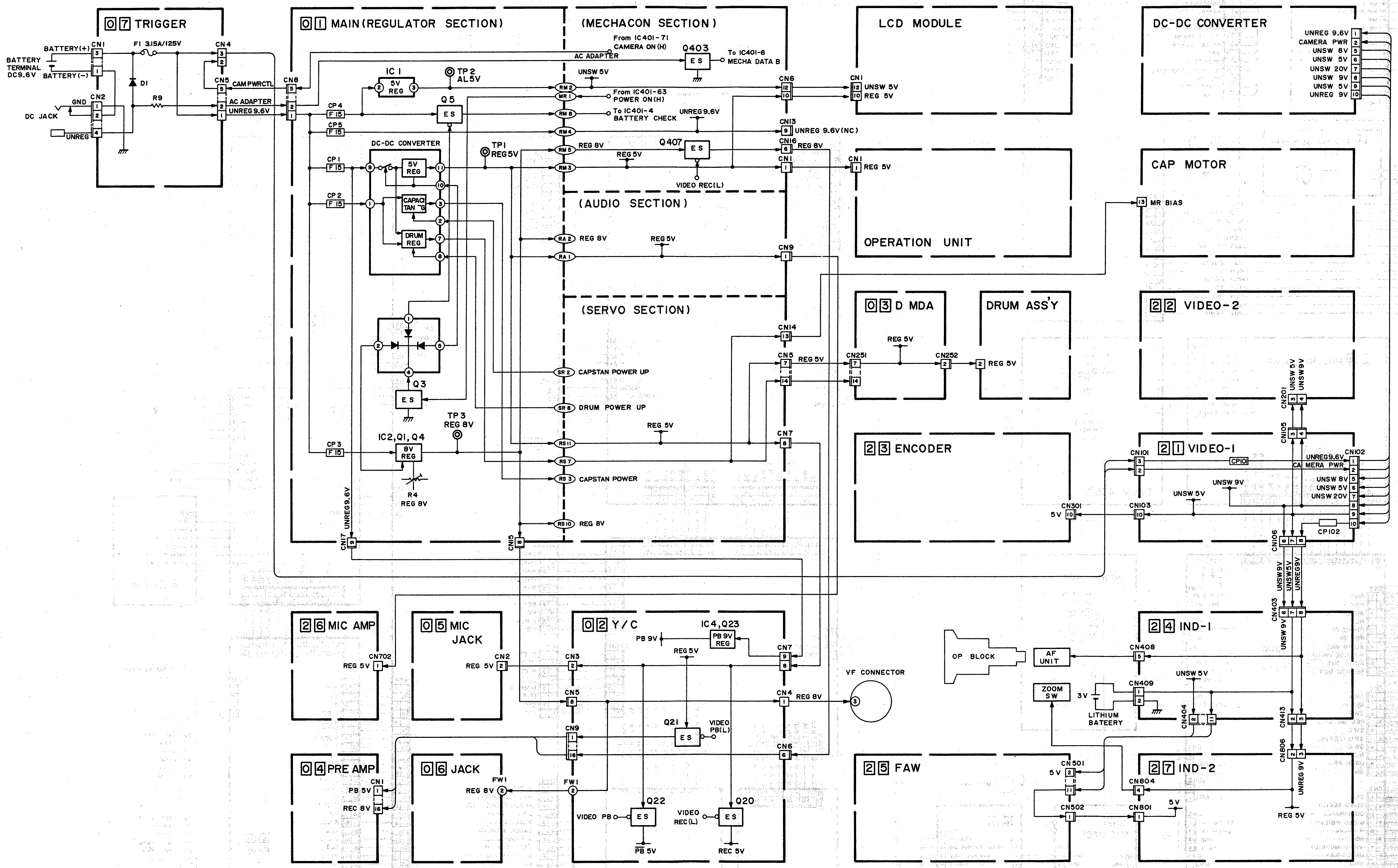

LCD MODULE CNA
01 MAIN
CN6
CAMERA ON (H)
SERIAL DATA
COUNTER OPERATE (L)
MEMORY STOP (H)
COUNT PULSE
SERIAL CLOCK
GND
RESET (L)
OUTPUT ENABLE (H)
REG 5V
COUNT UP (H)
UNSW 5V
OPERATION UNIT
CN1
GND
GND
GND
NC
NC
EDIT (L)
TRIG ALM
TRIG SW
KEY A
KEY B
POWER SW(L)
REG 5V
MODE CTL SW
CN11
CAM B
GND
CAM A
08 SENSOR
CN2
REEL SENSOR LED
SUPPLY REEL FG
TAKE UP REEL FG
GND
NC
REC SAFETY SW
LOADING MOTOR
CN12
LOAD
NC (GND)
UN LOAD
CN7
VIDEO REC(L)
REC INDICATE(L)
FADER REQUEST(⊓)
SP(L)/EP(H)
VIDEO PB(L)
FADER MODE(H)
A FADER CTL
TAPE END(H)
BATTERY ALARM(H)
NC
IND-1 PWB CN401
CN8
UNREG 9.6V
AC ADAPTER
ALARM SW
TRIGGER SW
CAM PWR CTL
GND
GND
TRIG PWB CN5
CN9
REG 5V
AUDIO FADER SIG
SIGNAL GND
MIC AUDIO
MIC GND
NC
MIC AMP PWB CN702
CN3
FE HEAD
FE HEAD
GND
FE HEAD
CN10
CTL HEAD
CTL HEAD (−)
CTL HEAD (+)
AUDIO GND
A R/P HEAD
A R/P HEAD (+)
A R/P HEAD (−)
A E HEAD
AE HEAD (−)
AE HEAD (+)
CN13
NC
UNREG 9.6V
CHECK
1/2 PB CTL
PB CTL PULSE
CTL DLY REF
TRACKING PRESET
TEST I
TEST O
GND
MECHACON
GND
TRIG ALM
KEY A
KEY B
POWER SW(L)
CAM B
GND
CAM A
REEL SENSOR LED
SUPPLY REEL FG
TAKE UP REEL FG
GND
NC
REC SAFETY SW
LOAD
NC (GND)
UN LOAD
UNSW 5V
COUNT UP(H)
REG 5V
OUTPUT ENABLE(H)
RESET(L)
GND
SERIAL CLOCK
COUNT PULSE
MEMORY STOP(H)
COUNTER OPERATE(L)
SERIAL DATA
CAMERA ON(H)
SENSOR GND
END SENSOR LED
CASSETTE SW
DRUM ON(H)
DEW SENSOR
REMOTE IN
V PULSE ON(H)
REMOTE OUT
REC 8V
REC MUTE(L)
VIDEO REC(L)
REC INDICATE(L)
FADER REQUEST(⊓)
SP(L)/EP(H)
VIDEO PB(L)
FADER MODE(H)
TAPE END(H)
BATTERY ALARM(H)
AC ADAPTER
ALARM SW
UNREG 9.6V
TEST I
TEST O
VIDEO MUTE(L)
POWER ON(H)
UNSW 5V
REG 5V
UNREG 9.6V
REG 8V
GND (MOTOR)
GND (SIGNAL)
BATTERY CHECK
AUDIO EE(H)
AUDIO MUTE(H)
AV REC MUTE(L)
SP(L)/EP(H)
MS1
MS2
MS3
MS4
MS5
MS6
MS7
MS8
MS9
MS13
MS14
SM10
SM11
SM12
MA1
MA2
MA3
MA4
MR1
RM2
RM3
RM4
RM5
RM6
RM7
RM8
SERVO
CAPSTAN FWD(L)
CAPSTAN REV(L)
PAUSE(H)
SERVO MODE A
SERVO MODE I
SEARCH(H)
CAP M(H)/S(L)
REC CTL DUTY
SP(L)/EP(H)
V PULSE ON(H)
CAPSTAN FG
DRUM FF
CTL PULSE
CAPSTAN POWER
GND (MOTOR)
DRUM POWER
REG 8V
REG 5V
GND (SIGNAL)
CAPSTAN POWER UP
CAPSTAN REFERENCE
DRUM ERROR
DRUM POWER UP
RS3
RS5
RS7
RS10
RS11
RS12
SR2
SR4
SR6
SR8
CTL HEAD (−)
CTL HEAD (+)
COIL 2
HG 1(−)
COIL 3
HG2(+)
HG BIAS(+)
HG BIAS(−)
HG 2(−)
HG 1(+)
HG3(−)
COIL 1
HG 3(+)
MR 1
MR BIAS(+)
MR 2
MR BIAS(−)
MOTOR GND
DRUM PG
DRUM ERROR
DRUM FG
DRUM REFERENCE
DRUM POWER
FSC
SW A
SW B
SW C
SW D
DRUM FF
V PULSE
REG 5V
COMP SYNC
TRACKING PRESET
CTL DUTY REF
PB CTL PULSE
1/2 PB CTL
CN14
CN4
CN5
REGULATOR
GND
UNREG 9.6V
CAPSTAN POWER
GND (MOTOR)
DRUM POWER
REG 8V
REG 5V
GND (SIGNAL)
CAPSTAN POWER UP
CAPSTAN REFERENCE
DRUM ERROR
DRUM POWER UP
UNREG 9.6V
REG 8V
REG 5V
REG 8V
GND
RA1
RA2
RA3
AUDIO
AUDIO EE(H)
AUDIO MUTE(H)
AV REC MUTE(L)
SP(L)/EP(H)
PHONE OUT
AUDIO GND
AUDIO OUT
REG 5V
SIGNAL GND
MIC AUDIO
MIC GND
FE HEAD
FE HEAD
AE HEAD(+)
AE HEAD(−)
A R/P HEAD(−)
A R/P HEAD(+)
CN15
CN16
CN17

NOTE: ▨ portions are connected by patchcords each other, refer to note of patchcords of page 4-30.

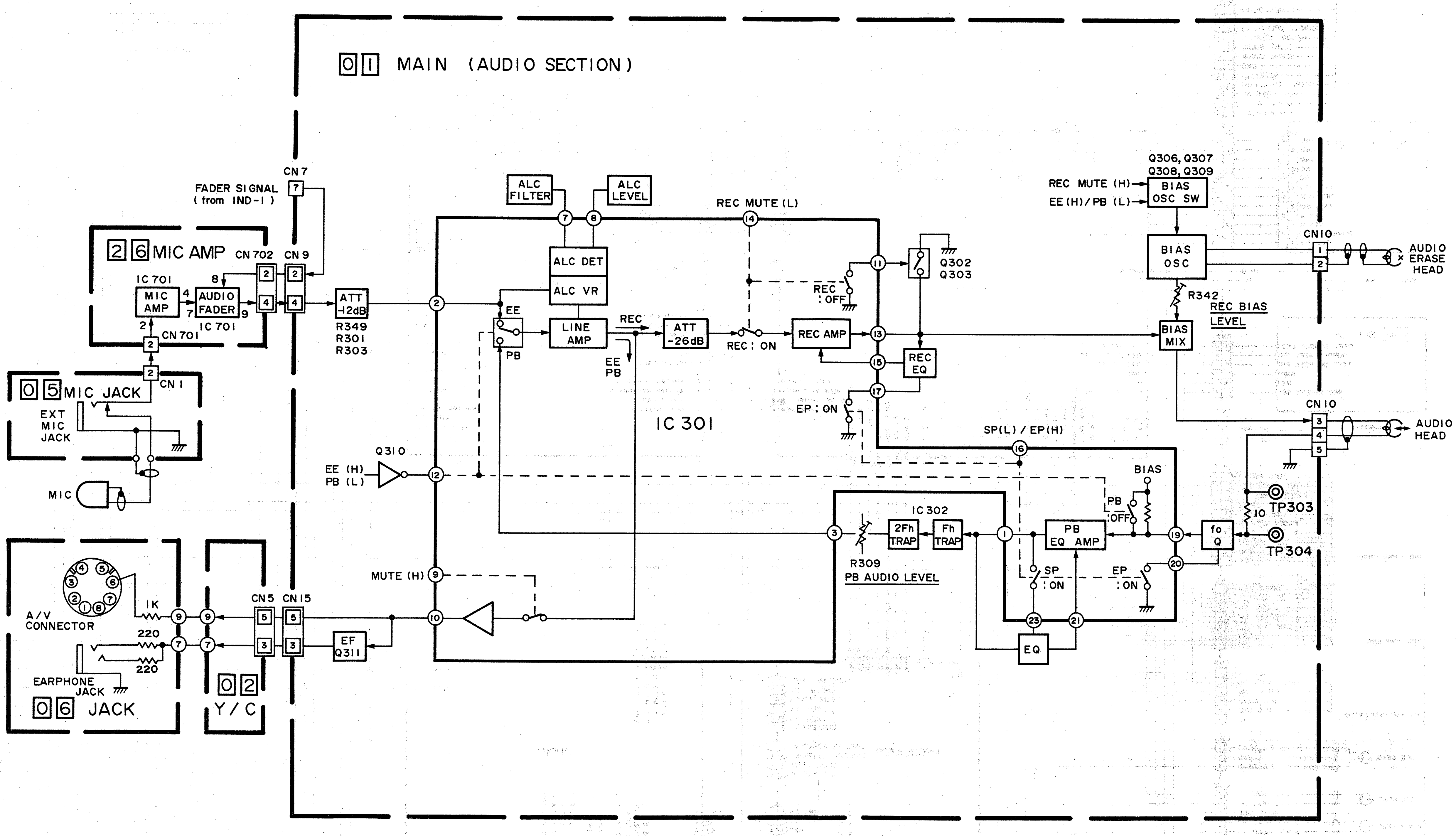

01-CN6
CAP MOTOR
CN14
MR BIAS(−)
MR 2
MR BIAS(+)
MR 1
HG 3(+)
COIL 1
HG 3(−)
HG 1(+)
HG 2(−)
HG BIAS(−)
HG BIAS(+)
HG 2(+)
COIL 3
HG 1(−)
COIL 2
M
LCD MODULE
CN1
CAMERA ON(H)
SERIAL DATA
COUNTER OPERATE(L)
MEMORY STOP(M)
COUNT PULSE
SERIAL CLOCK
GND
RESET(L)
OUTPUT ENABLE(H)
REG 5V
COUNT UP(H)
UNSW 5V
CN2
WBO B
WBO A
SHUTTER 2
SHUTTER 1
AF OUT
FULL AUTO
STD
FOCUS
COLOR
GND
E VF CONNECTOR
34 END SENSOR
END SENS TR
CN4
33 LED
END SENS LED
CN253
LED GND
END LED
CN254
DEW SENS
GND
DEW SENSOR
03 D MDA
CN251
CN252
SENSOR GND
MOTOR GND
END SENSOR LED
SIGNAL GND
EMERGENCY
CASSETTE SW
DRUM ON(H)
DEW SENSOR
DRUM PG
DRUM ERROR
DRUM FG
DRUM REFERENCE
REG 5V
DRUM POWER
HG 1(−)
HG BIAS(+)
HG 1(+)
COIL 1
COIL 3
COIL 2
HG 3(−)
HG 3(+)
FG(+)
FG(−)
HG 2(−)
HG 2(+)
HG BIAS(−)
PU(+)
PU(−)
CN5
04 PRE/REC AMP
CN2
CH3 HEAD (P)
CH3 HEAD (R)
CH1 HEAD (P)
CH1 HEAD (R)
CH4 HEAD (P)
CH4 HEAD (R)
CH2 HEAD (P)
CH2 HEAD (R)
CN1
PB 5V
DRUM FF
TP PB FM
REC FM
PB FM
TP REC FM
SP(L)/EP(H)
GND
REC MUTE(H)
SW B
SW D
SW A
SW C
REC COLOR
REC COLOR
REC 8V
PU HEAD
DRUM MOTOR
DRUM ASS'Y
TRIGGER SW
ALARM SW
BATTERY TERMINAL
DC JACK
07 TRIGGER
CN5
UNREG 9.6V
AC ADAPTER
ALARM SW
TRIGGER SW
CAM PWR CTL
GND
GND
CN4
GND
CAM PWR
UNREG 9.6V
CN1
BATTERY (−)
NC
BATTERY (+)
CN2
GND
BATTERY (−)
NC
UNREG 9.6V
CN3
TRIG SW(B)
GND
23 ENC
CN303
CHARACTOR
GND
CN302
YHL
KEY P
R
G
B
SMTH
FADER CTL
FRING
CN304
COLOR
GND
Y
GND
CN301
CP
GND
NC
C SYNC
HD
C BLK
CFHO
BF
NC
5V
CN305
GND
SC
SC
GND
GND
R-Y
YH
B-Y
CN103
CN104
CN106
CN107
21 VIDEO-1
CN101
GND
CAM PWR
UNREG 9.6V
CN105
SC2
GND
GND
OH
5V
1H
9V
2H
CN102
UNREG 9.6V
CAMERA PWR
GND
GND
UNSW −8V
UNSW 15V
UNSW 20V
UNSW 9V
UNSW 5V
UNREG 9V
CN201
22 VIDEO-2
DC-DC CONVERTER
01-CN7
24 IND-1
CN410
VF IND
GND
CN402
WBO B
WBO A
SHUTTER 2
SHUTTER 1
AF OUT
FULL AUTO
STD
FOCUS
COLOR
GND
CN412
CN413
CN403
GND
UNSW 9V
SHA-2
UNSW 5V
SHA-1
UNREG 9V
BCP-1
HD
C BLK
VD
CN411
B CTL
EE Y
R CTL
LLL
MODE B
IRIS
GND
GND
CN401
VIDEO REC(L)
REC INDICATE(L)
FADER REQUEST (⎍L)
SP(L)/EP(H)
VIDEO PB (L)
FADER MODE(H)
A FADER CTL
TAPE END (H)
BATTERY ALARM (H)
NC
CN404
DATE UNIT
CN405
GND
ADJ SEL
DISPLAY SEL
ADJ SET
DISPLAY REC SW
REC TIME RESET
LAP TIME SW
TRIG SW
GND
CN409
BATT (+)
BATT (−)
TIMER BATTERY
OP BLOCK
IRIS DRIVER
ZOOM MOTOR
AF UNIT
CN408
DRIVE 2
DAMP 2
DRIVE 1
DAMP 1
GND
UNREG 9V
FF
CF
BF
AF OUT
CN805
ZOOM W
ZOOM T
27 IND-2
CN802
YHL
KEY P
R
G
P
CN804
WDIE
TELE
FAST
REG 5V
ZOOM SW
FAST
SLOW
TELE
WIDE
CN806
GND
5V
UNREG 9V
CN803
CN801
5V
C BLK
P1
P2
V REC(L)
VD
BATT(−)
CL1
CL2
CL3
GND
HD
CN901
GND
REVERS SW
PAGE SW
COLOR SW
MEMORY SW
TITLE SW
28 SW
CN502
CN501
GND
P1
5V
V REC (L)
MODE A
BATT (−)
MODE B
CL1
WBO B
GND
WBO A
C BLK
BLC
P2
FADER
VD
R CTL
CL2
B CTL
CL3
5V
HD
CN503
NC
25 FAW
CN15
CN16
CN17
CN9
02 Y/C
CN5
GND
FSC
REMOTE IN
NC
PHONE OUT
REG 8V
AUDIO GND
V PULSE ON(H)
AUDIO OUT
REMOTE OUT
CN6
SW A
REC 8V
SW B
REC MUTE(L)
SW C
SP(L)/EP(H)
SW D
NC
DRUM FF
GND
CN7
GND
VIDEO REC(L)
DUBBING(L)
VIDEO PB(L)
V PULSE
REG 5V
VIDEO MUTE(L)
UNREG 9.6V
GND
COMP SYNC
CN4
REG 8V
GND
VIDEO
FW1
VIDEO GND
REG 8V
GND
NC
REMOTE SW
NC
FW2
PHONE OUT
AUDIO GND
AUDIO OUT
REMOTE
NC
NC
VIDEO GND
VIDEO OUT
CN1
COLOR
GND
CN2
Y
GND
CN8
TP PB FM
DRUM FF
GND
SW A
NC
CN3
GND
REG 5V
06 JACK
AV CONN
FW 1
FW 2
EARPHONE
REMOTE
05 MIC JACK
CN2
GND
REG5V
CN1
BIAS
MIC
GND
MIC UNIT
26 MIC AMP
CN702
CN701
REG 5V
AUDIO FADER SIG
SIGNAL GND
MIC AUDIO
MIC GND
01-CN9
01-CN8

NO	PWB NAME
34	END SENSOR
33	LED
28	SW
27	IND-2
26	MIC AMP
25	FAW
24	IND-1
23	ENC
22	VIDEO-2
21	VIDEO-1
08	SENSOR
07	TRIGGER
06	JACK
05	MIC JACK
04	PRE AMP
03	D MDA
02	Y/C
01	MAIN

4.6 POWER SYSTEM BLOCK DIAGRAM

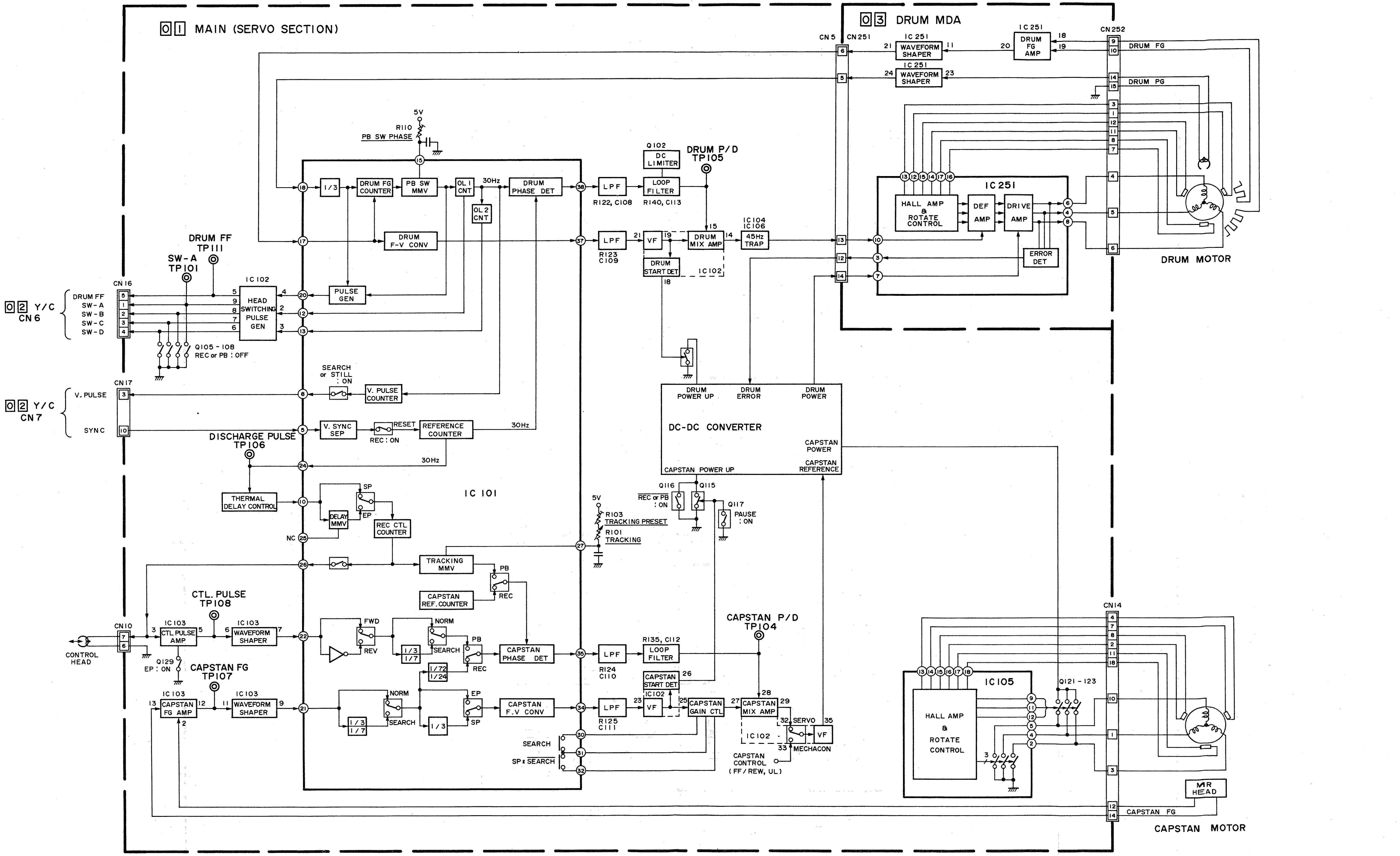

07 TRIGGER
BATTERY(+)
BATTERY TERMINAL DC9.6V
BATTERY(−)
DC JACK
GND
UNREG
CN1
CN2
CN4
CN5
F1 3.15A/125V
D1
R9
CAM PWRCTL
AC ADAPTER
UNREG 9.6V
01 MAIN (REGULATOR SECTION)
CN8
IC1
5V REG
TP2 AL5V
Q5
ES
CP4 F15
CP5 F15
CP1 F15
CP2 F15
CP3 F15
DC-DC CONVERTER
5V REG
CAPACITANCE
DRUM REG
TP1 REG5V
Q3
ES
TP3 REG 8V
IC2,Q1,Q4
8V REG
R4 REG 8V
UNREG9.6V
CN17
CN15
(MECHACON SECTION)
From IC401-71 CAMERA ON (H)
AC ADAPTER
Q403
To IC401-6 MECHA DATA B
UNSW 5V
From IC401-63 POWER ON(H)
To IC401-4 BATTERY CHECK
UNREG9.6V
Q407
REG 8V
REG5V
VIDEO REC(L)
RM2
MR1
RM8
RM4
RM5
RM3
CN6
CN13
UNREG 9.6V(NC)
CN16
REG 8V
CN1
(AUDIO SECTION)
RA2 REG 8V
REG5V
RA1
CN9
(SERVO SECTION)
CN14
CN5
REG 5V
SR2 CAPSTAN POWER UP
SR6 DRUM POWER UP
REG 5V
RS11
RS7
RS3 CAPSTAN POWER
RS10 REG 8V
CN7
LCD MODULE
CN1
UNSW 5V
REG 5V
REG 5V
OPERATION UNIT
03 D MDA
REG 5V
CN251
CN252
DRUM ASS'Y
REG 5V
23 ENCODER
CN301
5V
DC-DC CONVERTER
UNREG 9.6V
CAMERA PWR
UNSW 8V
UNSW 5V
UNSW 20V
UNSW 9V
UNSW 5V
UNREG 9V
CAP MOTOR
MR BIAS
22 VIDEO-2
CN201
UNSW 5V
UNSW 9V
CN105
21 VIDEO-1
CN101
CN102
CP101
UNREG9.6V
CAMERA PWR
UNSW 8V
UNSW 5V
UNSW 20V
UNSW 9V
UNSW 5V
CN103
CP102
CN106
UNSW9V
UNSW5V
UNREG9V
CN403
24 IND-1
UNSW 9V
CN408
AF UNIT
OP BLOCK
ZOOM SW
3V
LITHIUM BATEERY
CN409
UNSW 5V
CN404
CN413
CN806
UNREG 9V
27 IND-2
CN804
CN801
5V
REG 5V
25 FAW
CN501
5V
CN502
VF CONNECTOR
26 MIC AMP
CN702
REG 5V
05 MIC JACK
CN2
REG 5V
02 Y/C
PB 9V
IC4,Q23
PB 9V REG
REG 5V
CN3
CN7
CN5
CN4
REG 8V
CN9
Q21
ES
VIDEO PB(L)
CN6
FW1
Q22
Q20
VIDEO PB
VIDEO REC(L)
PB 5V
REC 5V
04 PRE AMP
CN1
PB 5V
REC 8V
06 JACK
FW1
REG 8V

4.7 AUDIO BLOCK DIAGRAM



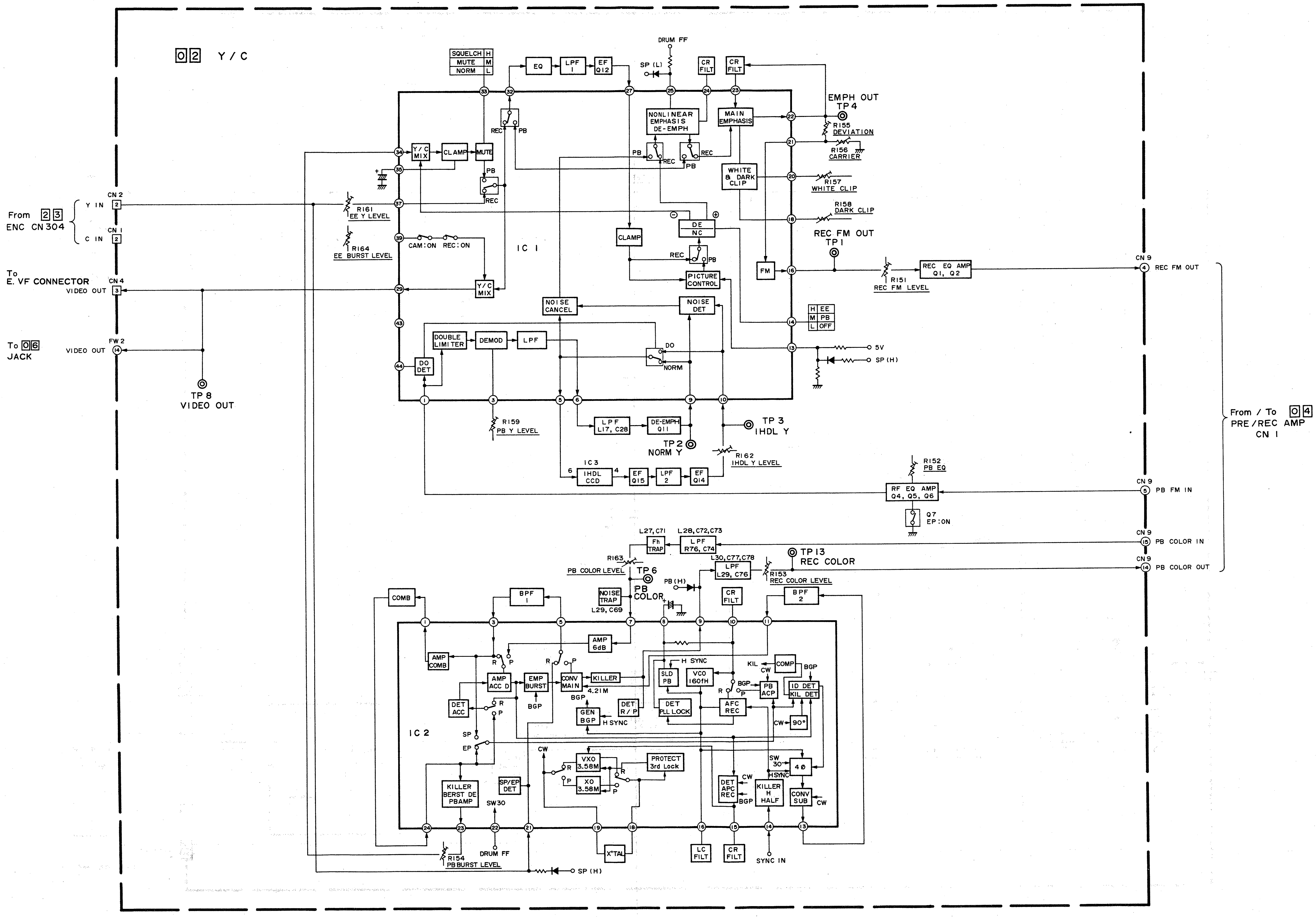
01 MAIN (AUDIO SECTION)
CN7
FADER SIGNAL
(from IND-1)
26 MIC AMP
CN702
CN9
IC701
MIC AMP
AUDIO FADER
IC701
CN701
CN1
05 MIC JACK
EXT MIC JACK
MIC
ATT -12dB
R349
R301
R303
ALC FILTER
ALC LEVEL
ALC DET
ALC VR
EE
PB
LINE AMP
REC
EE
PB
ATT -26dB
REC : ON
REC MUTE (L)
REC : OFF
REC AMP
REC EQ
EP : ON
Q302
Q303
IC 301
Q310
EE (H)
PB (L)
MUTE (H)
IC302
2Fh TRAP
Fh TRAP
R309
PB AUDIO LEVEL
PB EQ AMP
EQ
SP(L) / EP(H)
BIAS
PB : OFF
SP : ON
EP : ON
fo Q
10
TP303
TP304
Q306, Q307
Q308, Q309
REC MUTE (H)
EE (H) / PB (L)
BIAS OSC SW
BIAS OSC
R342
REC BIAS LEVEL
BIAS MIX
CN10
AUDIO ERASE HEAD
CN10
AUDIO HEAD
A/V CONNECTOR
1K
220
220
EARPHONE JACK
06 JACK
CN5
CN15
02 Y/C
EF Q311

4.8 SERVO BLOCK DIAGRAM



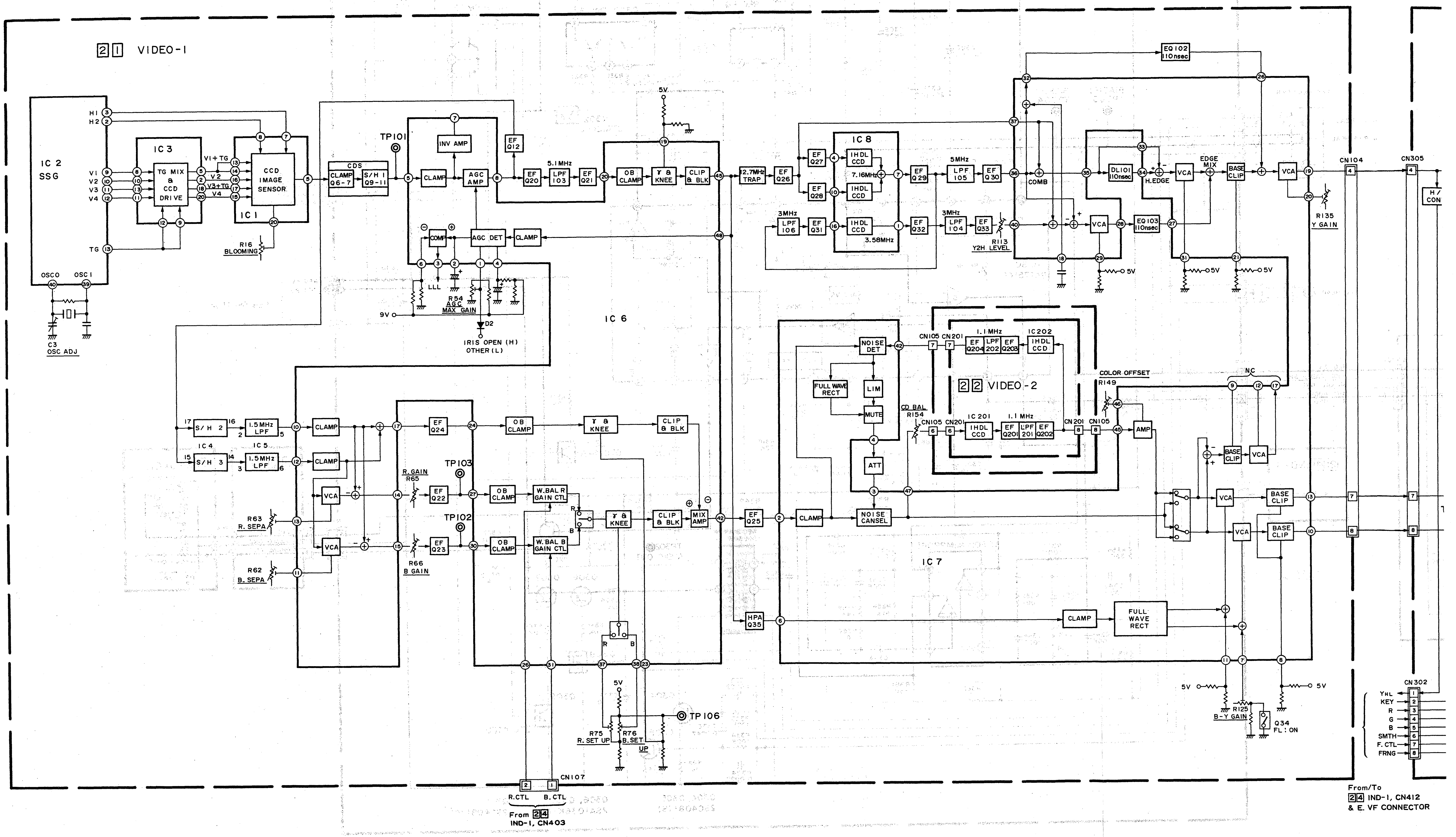
01 MAIN (SERVO SECTION)
03 DRUM MDA
CN5
CN251
IC251
WAVEFORM SHAPER
21
11
24
23
IC251
DRUM FG AMP
20
18
19
CN252
DRUM FG
DRUM PG
5V
R110
PB SW PHASE
15
16
1/3
DRUM FG COUNTER
PB SW MMV
OL1 CNT
OL2 CNT
30Hz
DRUM PHASE DET
38
LPF
R122, C108
Q102
DC LIMITER
LOOP FILTER
R140, C113
DRUM P/D
TP105
DRUM F-V CONV
17
37
R123
C109
VF
DRUM MIX AMP
IC104
IC106
45Hz TRAP
DRUM START DET
IC102
IC251
HALL AMP & ROTATE CONTROL
DEF AMP
DRIVE AMP
ERROR DET
DRUM MOTOR
DRUM FF
TP111
SW-A
TP101
CN16
02 Y/C
CN6
DRUM FF
SW-A
SW-B
SW-C
SW-D
IC102
HEAD SWITCHING PULSE GEN
PULSE GEN
20
12
13
Q105 - 108
REC or PB : OFF
CN17
02 Y/C
CN7
V. PULSE
SYNC
SEARCH or STILL : ON
V. PULSE COUNTER
V. SYNC SEP
RESET
REC : ON
REFERENCE COUNTER
30Hz
DISCHARGE PULSE
TP106
24
THERMAL DELAY CONTROL
SP
DELAY MMV
EP
REC CTL COUNTER
IC 101
NC
25
26
27
TRACKING MMV
PB
REC
CAPSTAN REF. COUNTER
DRUM POWER UP
DRUM ERROR
DRUM POWER
DC-DC CONVERTER
CAPSTAN POWER
CAPSTAN POWER UP
CAPSTAN REFERENCE
Q116
Q115
REC or PB : ON
Q117
PAUSE : ON
5V
R103
TRACKING PRESET
R101
TRACKING
CTL. PULSE
TP108
CN10
IC103
CTL PULSE AMP
IC103
WAVEFORM SHAPER
CONTROL HEAD
Q129
EP : ON
CAPSTAN FG
TP107
IC103
CAPSTAN FG AMP
IC103
WAVEFORM SHAPER
FWD
REV
NORM
1/3
1/7
SEARCH
PB
REC
1/72
1/24
CAPSTAN PHASE DET
NORM
SEARCH
EP
SP
1/3
CAPSTAN F.V CONV
35
34
LPF
R124
C110
R135, C112
LOOP FILTER
CAPSTAN P/D
TP104
CAPSTAN START DET
IC102
VF
R125
C111
CAPSTAN GAIN CTL
CAPSTAN MIX AMP
SERVO
VF
IC102
MECHACON
CAPSTAN CONTROL (FF/REW, UL)
SEARCH
SP: SEARCH
30
31
32
CN14
IC105
HALL AMP & ROTATE CONTROL
Q121 - 123
MR HEAD
CAPSTAN FG
CAPSTAN MOTOR

4.9 Y/C BLOCK DIAGRAM

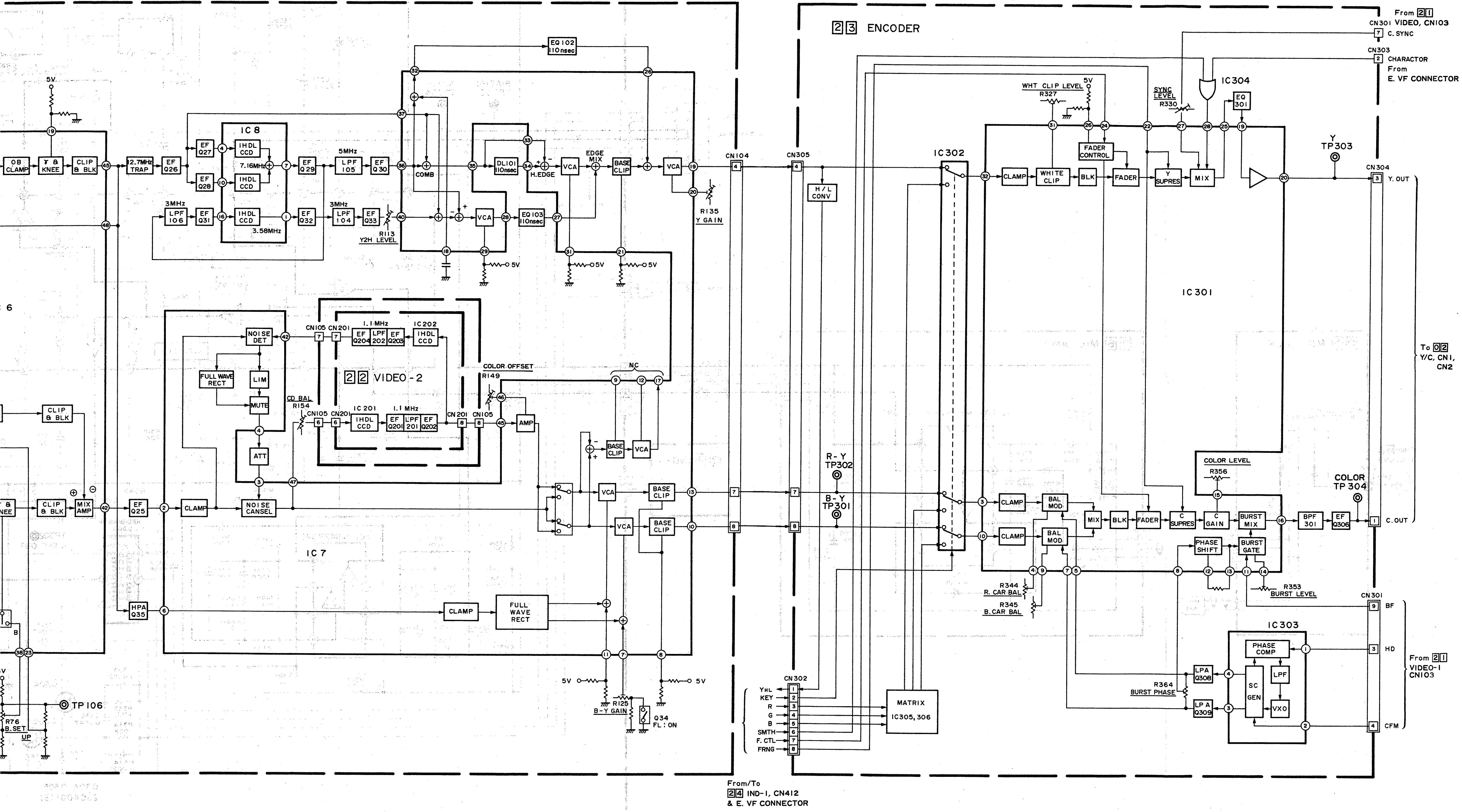


02 Y/C
SQUELCH H
MUTE M
NORM L
EQ
LPF 1
EF Q12
DRUM FF
SP (L)
CR FILT
CR FILT
NONLINEAR EMPHASIS DE-EMPH
MAIN EMPHASIS
EMPH OUT
TP4
R155 DEVIATION
R156 CARRIER
R157 WHITE CLIP
R158 DARK CLIP
WHITE & DARK CLIP
REC FM OUT
TP1
Y/C MIX
CLAMP
MUTE
REC
PB
From 23 ENC CN304
CN2
Y IN
CN1
C IN
R161 EE Y LEVEL
R164 EE BURST LEVEL
CAM:ON
REC:ON
IC 1
CLAMP
DE NC
PICTURE CONTROL
FM
REC EQ AMP Q1, Q2
R151 REC FM LEVEL
CN9
REC FM OUT
To E. VF CONNECTOR
CN4
VIDEO OUT
Y/C MIX
NOISE CANCEL
NOISE DET
H EE
M PB
L OFF
To 06 JACK
FW2
VIDEO OUT
DOUBLE LIMITER
DEMOD
LPF
DO DET
DO
NORM
5V
SP (H)
TP8
VIDEO OUT
R159 PB Y LEVEL
LPF L17, C28
DE-EMPH Q11
TP2 NORM Y
TP3 IHDL Y
R162 IHDL Y LEVEL
IC3
IHDL CCD
EF Q15
LPF 2
EF Q14
From / To 04 PRE/REC AMP CN1
R152 PB EQ
RF EQ AMP Q4, Q5, Q6
CN9
PB FM IN
Q7 EP:ON
L27, C71
L28, C72, C73
Fh TRAP
LPF R76, C74
CN9
PB COLOR IN
R163
PB COLOR LEVEL
TP6 PB COLOR
TP13 REC COLOR
L30, C77, C78
LPF L29, C76
R153 REC COLOR LEVEL
CN9
PB COLOR OUT
PB (H)
COMB
BPF 1
NOISE TRAP
L29, C69
CR FILT
BPF 2
AMP 6dB
AMP COMB
AMP ACC D
EMP BURST
CONV MAIN
KILLER
4.21M
BGP
H SYNC
SLD PB
VCO 160fH
KIL
COMP
CW
BGP
PB ACP
ID DET KIL DET
DET ACC
GEN BGP
DET R/P
DET PLL LOCK
AFC REC
90°
IC 2
SP
EP
CW
VXO 3.58M
XO 3.58M
PROTECT 3rd Lock
SW 30
40
H SYNC
DET APC REC
KILLER H HALF
CONV SUB
KILLER BERST DE PBAMP
SP/EP DET
SW30
R154 PB BURST LEVEL
DRUM FF
X'TAL
SP (H)
LC FILT
CR FILT
SYNC IN

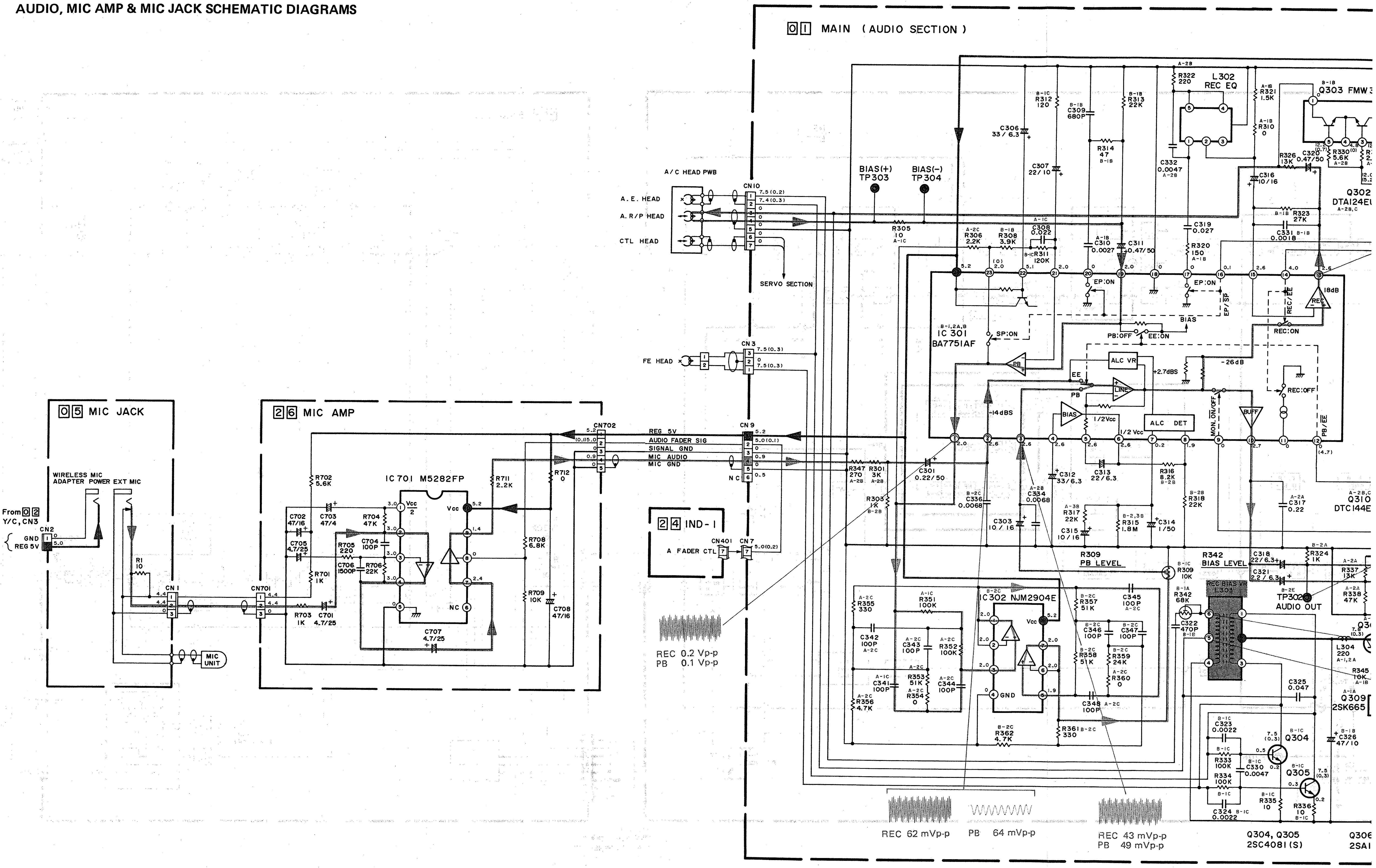
4.10 VIDEO BLOCK DIAGRAM

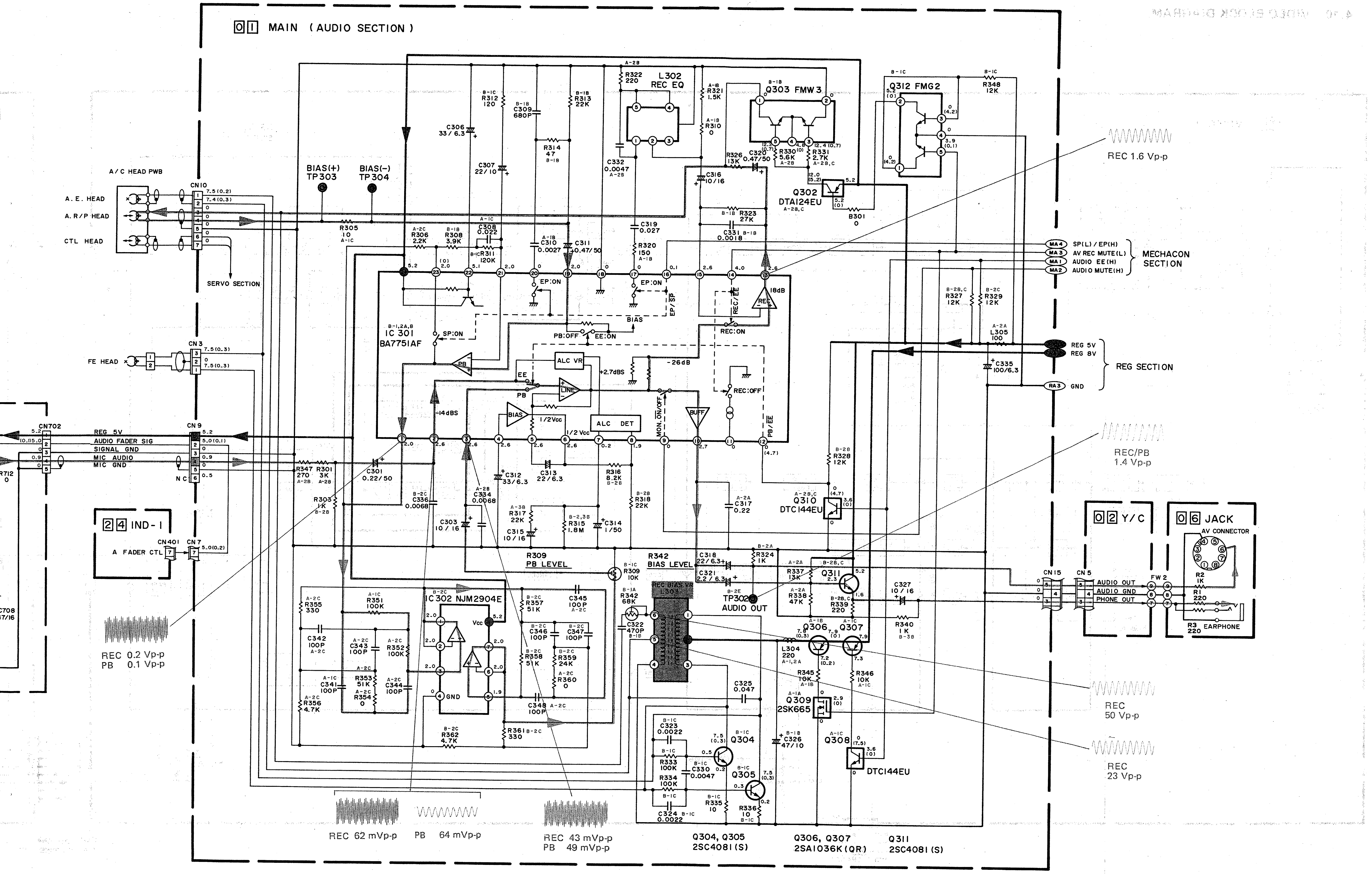


2 1 VIDEO-1
IC 2 SSG
H1
H2
V1
V2
V3
V4
TG
OSCO
OSC1
C3 OSC ADJ
IC3
TG MIX & CCD DRIVE
V1+TG
V2
V3+TG
V4
CCD IMAGE SENSOR
IC1
R16 BLOOMING
TP101
CDS
CLAMP Q6-7
S/H 1 Q9-11
CLAMP
INV AMP
AGC AMP
EF Q12
EF Q20
5.1MHz
LPF 103
EF Q21
OB CLAMP
γ & KNEE
CLIP & BLK
5V
COMP
AGC DET
CLAMP
LLL
R54 AGC MAX GAIN
9V
D2
IRIS OPEN (H) OTHER (L)
IC 6
12.7MHz TRAP
EF Q26
EF Q27
EF Q28
IC 8
1HDL CCD
7.16MHz
1HDL CCD
3MHz
LPF 106
EF Q31
1HDL CCD
3.58MHz
EF Q29
EF Q32
5MHz
LPF 105
EF Q30
3MHz
LPF 104
EF Q33
R113 Y2H LEVEL
EQ102 110nsec
COMB
DL101 110nsec
H.EDGE
VCA
EDGE MIX
BASE CLIP
VCA
EQ103 110nsec
VCA
5V
5V
5V
R135 Y GAIN
CN104
CN305
H/ CON
S/H 2
1.5MHz LPF
IC4
IC5
S/H 3
1.5MHz LPF
CLAMP
CLAMP
VCA
VCA
R63 R. SEPA
R62 B. SEPA
EF Q24
R. GAIN R65
TP103
EF Q22
TP102
EF Q23
R66 B GAIN
OB CLAMP
OB CLAMP
OB CLAMP
γ & KNEE
CLIP & BLK
W.BAL R GAIN CTL
W.BAL B GAIN CTL
R
B
γ & KNEE
CLIP & BLK
MIX AMP
EF Q25
HPA Q35
R
B
5V
R75 R. SET UP
R76 B.SET UP
TP106
CN107
R.CTL
B.CTL
From 2 4 IND-1, CN403
NOISE DET
FULL WAVE RECT
LIM
MUTE
ATT
CLAMP
NOISE CANSEL
CN105
CN201
1.1MHz
IC202
EF Q204
LPF 202
EF Q203
1HDL CCD
2 2 VIDEO-2
CD BAL R154
CN105
CN201
IC 201
1.1MHz
1HDL CCD
EF Q201
LPF 201
EF Q202
CN201
CN105
COLOR OFFSET R149
NC
AMP
BASE CLIP
VCA
VCA
BASE CLIP
VCA
BASE CLIP
IC 7
CLAMP
FULL WAVE RECT
5V
5V
R125 B-Y GAIN
Q34 FL: ON
CN302
YHL
KEY
R
G
B
SMTH
F. CTL
FRNG
From/To 2 4 IND-1, CN412 & E. VF CONNECTOR

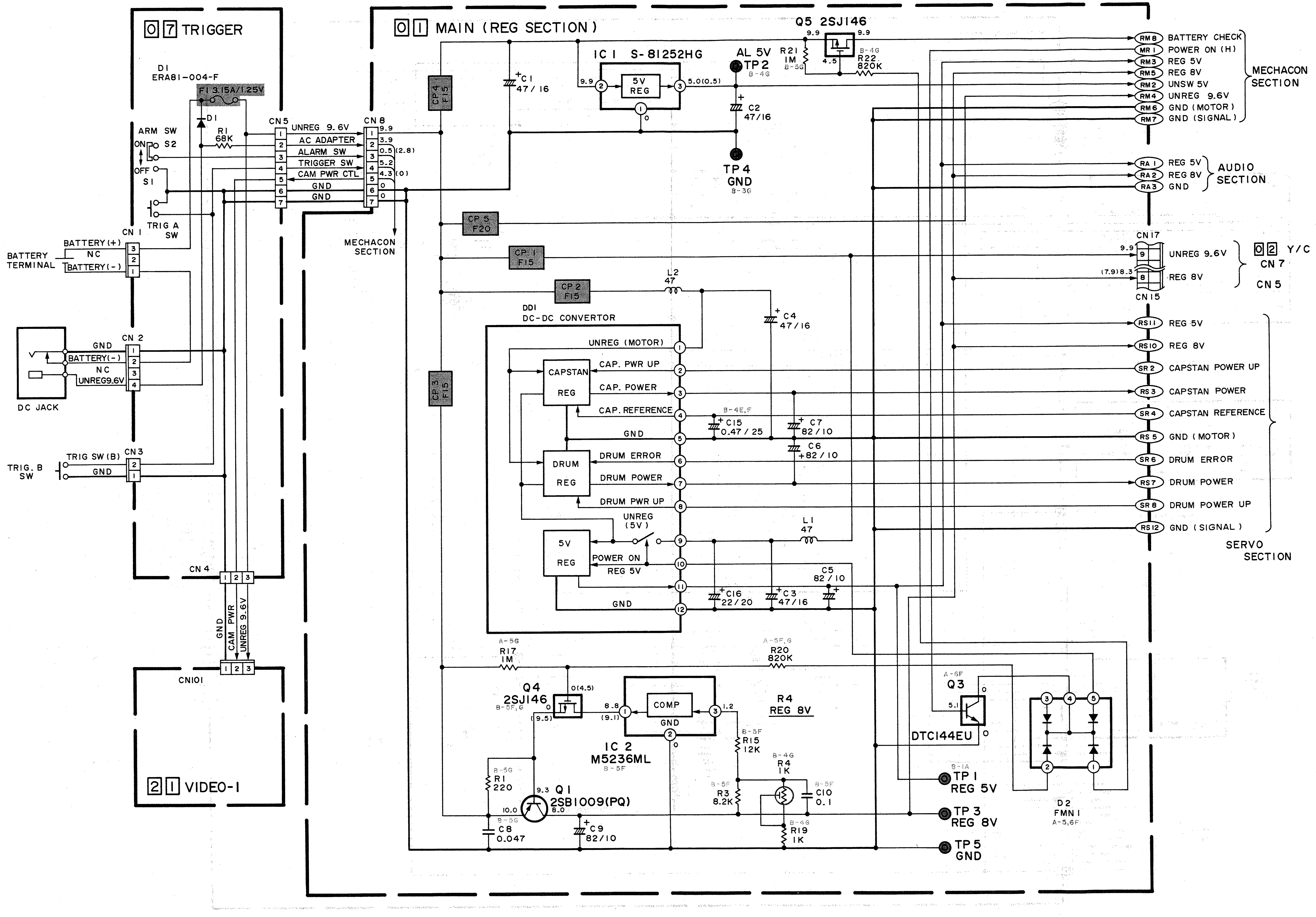

23 ENCODER
22 VIDEO-2
IC 8
IC 7
IC302
IC301
IC304
IC303
IC202
IC 201
OB CLAMP
γ & KNEE
CLIP & BLK
12.7MHz TRAP
EF Q26
EF Q27
EF Q28
IHDL CCD
7.16MHz
EF Q29
5MHz
LPF 105
EF Q30
COMB
3MHz
LPF 106
EF Q31
IHDL CCD
3.58MHz
EF Q32
LPF 104
EF Q33
R113 Y2H LEVEL
EQ102 110nsec
DL101 110nsec
H.EDGE
VCA
EDGE MIX
BASE CLIP
EQ103 110nsec
R135 Y GAIN
5V
NOISE DET
FULL WAVE RECT
LIM
MUTE
ATT
NOISE CANSEL
CN105
CN201
1.1MHz
EF Q204
LPF 202
EF Q203
IHDL CCD
COLOR OFFSET R149
CD BAL R154
EF Q201
LPF 201
EF Q202
AMP
NC
CLIP & BLK
MIX AMP
EF Q25
CLAMP
HPA Q35
FULL WAVE RECT
R125 B-Y GAIN
Q34 FL: ON
TP 106
R76 B.SET UP
CN104
CN305
H/L CONV
R-Y TP302
B-Y TP301
CN302
YHL
KEY
R
G
B
SMTH
F. CTL
FRNG
MATRIX IC305, 306
From/To
24 IND-1, CN412
& E. VF CONNECTOR
WHT CLIP LEVEL R327
FADER CONTROL
SYNC LEVEL R330
EQ 301
CLAMP
WHITE CLIP
BLK
FADER
Y SUPRES
MIX
Y TP303
CN304
Y. OUT
From 21
CN301 VIDEO, CN103
C. SYNC
CN303
CHARACTOR
From E. VF CONNECTOR
To 02 Y/C, CN1, CN2
COLOR LEVEL R356
COLOR TP 304
BAL MOD
C SUPRES
C GAIN
BURST MIX
BPF 301
EF Q306
C. OUT
PHASE SHIFT
BURST GATE
R344 R. CAR BAL
R345 B.CAR BAL
R353 BURST LEVEL
CN301
BF
HD
CFM
PHASE COMP
LPF
SC GEN
VXO
LPA Q308
LPA Q309
R364 BURST PHASE
From 21 VIDEO-1 CN103

4.11 AUDIO, MIC AMP & MIC JACK SCHEMATIC DIAGRAMS


01 MAIN (AUDIO SECTION)
05 MIC JACK
26 MIC AMP
24 IND-1
From 02 Y/C, CN3
CN2
GND
REG 5V
WIRELESS MIC ADAPTER POWER
EXT MIC
R1 10
CN1
MIC UNIT
CN701
CN702
R702 5.6K
IC701 M5282FP
C702 47/16
C703 47/4
R704 47K
C705 4.7/25
C704 100P
R705 220
C706 1500P
R706 22K
R701 1K
R703 1K
C701 4.7/25
C707 4.7/25
R711 2.2K
R712 0
R708 6.8K
R709 10K
C708 47/16
Vcc
NC
CN401
CN7
A FADER CTL
A/C HEAD PWB
A.E. HEAD
A.R/P HEAD
CTL HEAD
CN10
SERVO SECTION
FE HEAD
CN3
CN9
REG 5V
AUDIO FADER SIG
SIGNAL GND
MIC AUDIO
MIC GND
NC
BIAS(+) TP303
BIAS(-) TP304
R305 10
R306 2.2K
R308 3.9K
C308 0.022
R311 120K
R312 120
C309 680P
R313 22K
C306 33/6.3
C307 22/10
R314 47
C310 0.0027
C311 0.47/50
R322 220
L302 REC EQ
R321 1.5K
R310 0
C332 0.0047
C319 0.027
R320 150
Q303 FMW3
R326 13K
C320 0.47/50
R330 5.6K
C316 10/16
Q302 DTA124EU
R323 27K
C331 0.0018
IC301 BA7751AF
EP:ON
SP:ON
PB:OFF
EE:ON
BIAS
EP/SP
REC/EE
REC
18dB
REC:ON
PB
EE
ALC VR
LINE
+2.7dBS
-26dB
REC:OFF
-14dBS
BIAS
1/2Vcc
ALC DET
MON. ON/OFF
BUFF
PB/EE
R347 270
R301 3K
C301 0.22/50
R303 1K
C336 0.0068
C334 0.0068
C312 33/6.3
C313 22/6.3
R316 8.2K
R318 22K
C317 0.22
Q310 DTC144E
C303 10/16
R317 22K
R315 1.8M
C314 1/50
C315 10/16
R309 PB LEVEL
R342 BIAS LEVEL
C318 22/6.3
R324 1K
C321 2.2/6.3
R337 13K
R338 47K
R309 10K
R342 68K
REC BIAS VR L303
C322 470P
TP302 AUDIO OUT
L304 220
R345 10K
C325 0.047
Q309 2SK665
IC302 NJM2904E
R355 330
R351 100K
C342 100P
C343 100P
R352 100K
C341 100P
R353 51K
R354 0
C344 100P
R356 4.7K
R357 51K
C345 100P
C346 100P
C347 100P
R358 51K
R359 24K
R360 0
C348 100P
R361 330
R362 4.7K
GND
C323 0.0022
R333 100K
C330 0.0047
R334 100K
R335 10
R336 10
C324 0.0022
C326 47/10
Q304
Q305
Q304, Q305 2SC4081(S)
Q306 2SA
REC 0.2 Vp-p
PB 0.1 Vp-p
REC 62 mVp-p
PB 64 mVp-p
REC 43 mVp-p
PB 49 mVp-p

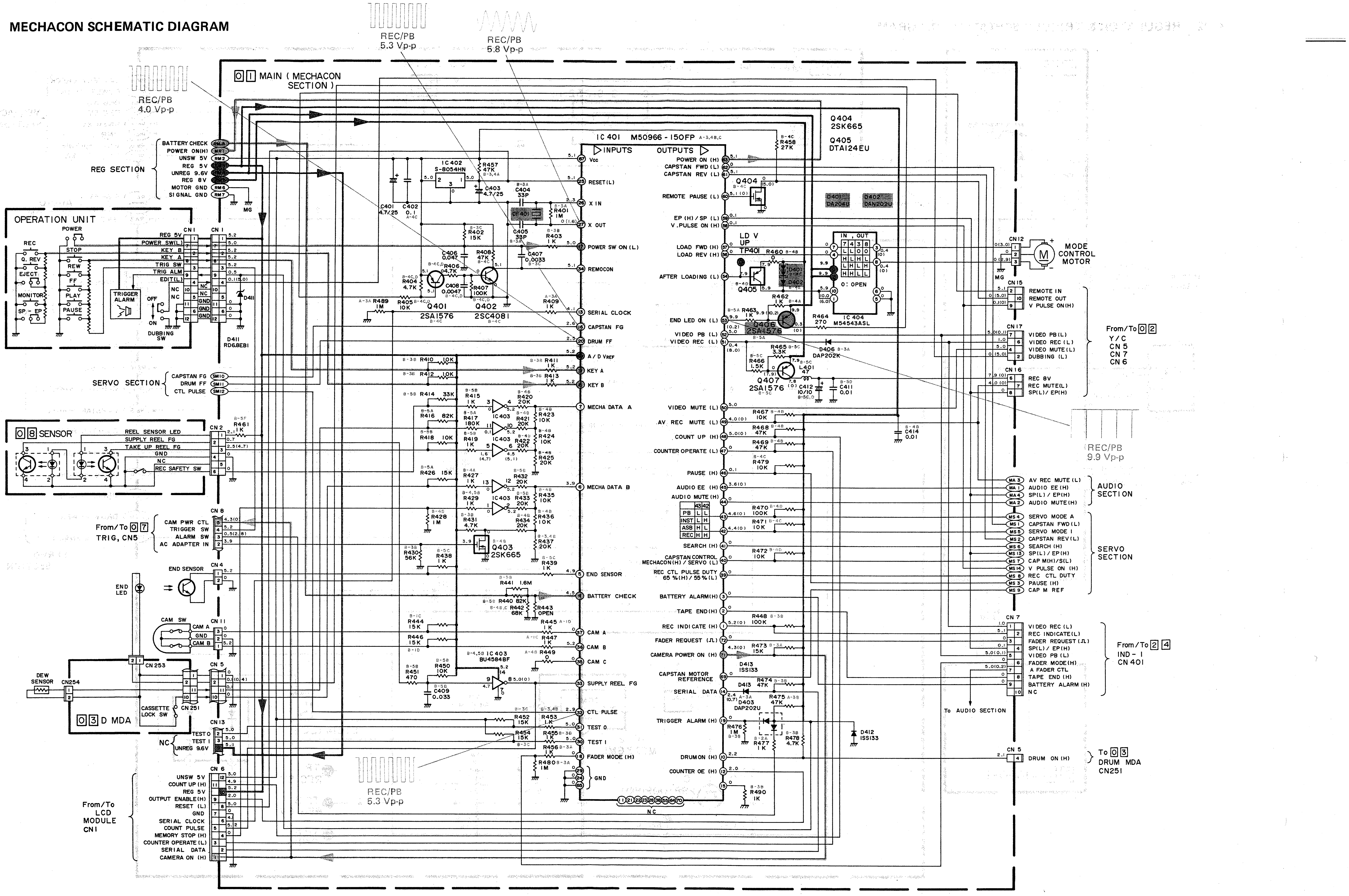

01 MAIN (AUDIO SECTION)
A/C HEAD PWB
A.E. HEAD
A.R/P HEAD
CTL HEAD
CN10
SERVO SECTION
BIAS(+) TP303
BIAS(−) TP304
FE HEAD
CN3
CN702
CN9
REG 5V
AUDIO FADER SIG
SIGNAL GND
MIC AUDIO
MIC GND
24 IND-1
CN401
CN7
A FADER CTL
L302 REC EQ
Q303 FMW3
Q312 FMG2
Q302 DTA124EU
IC 301 BA7751AF
SP:ON
EP:ON
PB:OFF
EE:ON
BIAS
REC/EE
REC:ON
REC:OFF
18dB
-14dBS
-26dB
+2.7dBS
ALC VR
ALC DET
LINE
BUFF
1/2Vcc
MON.ON/OFF
PB/EE
EP/SP
IC302 NJM2904E
R309 PB LEVEL
R342 BIAS LEVEL
REC BIAS VR L303
TP302 AUDIO OUT
Q310 DTC144EU
Q311
Q306
Q307
Q309 2SK665
Q308 DTC144EU
Q304
Q305
SP(L)/EP(H)
AV REC MUTE(L)
AUDIO EE(H)
AUDIO MUTE(H)
MECHACON SECTION
REG 5V
REG 8V
GND
REG SECTION
L305 100
C335 100/6.3
02 Y/C
06 JACK
AV CONNECTOR
CN15
CN5
FW2
AUDIO OUT
AUDIO GND
PHONE OUT
EARPHONE
REC 1.6 Vp-p
REC/PB 1.4 Vp-p
REC 50 Vp-p
REC 23 Vp-p
REC 0.2 Vp-p
PB 0.1 Vp-p
REC 62 mVp-p
PB 64 mVp-p
REC 43 mVp-p
PB 49 mVp-p
Q304, Q305 2SC4081(S)
Q306, Q307 2SA1036K(QR)
Q311 2SC4081(S)

4.12 REGULATOR & TRIGGER SCHEMATIC DIAGRAM

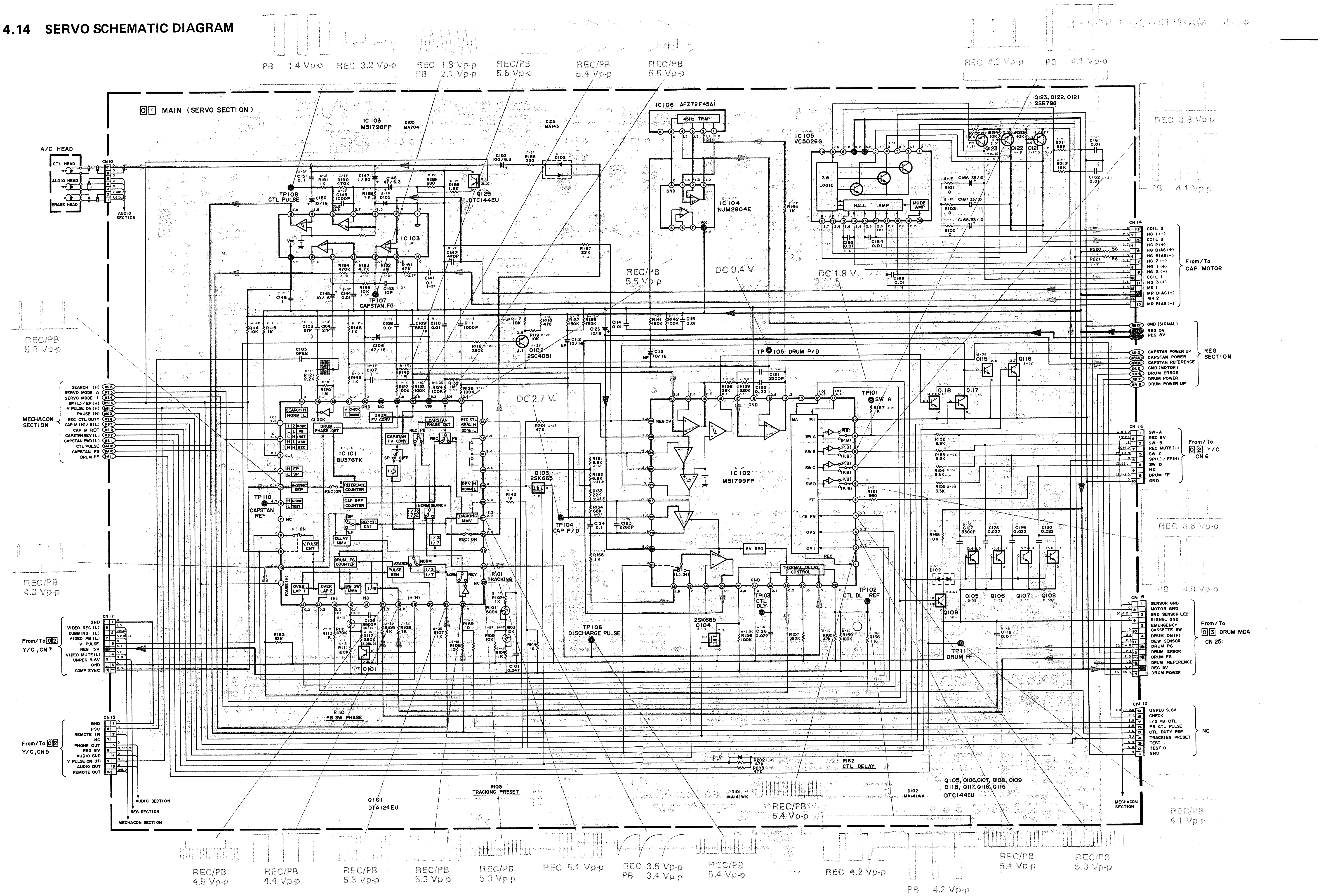


07 TRIGGER
D1 ERA81-004-F
F1 3.15A/1.25V
ARM SW
S2
S1
R1 68K
TRIG A SW
BATTERY TERMINAL
BATTERY(+)
NC
BATTERY(-)
CN1
CN2
GND
BATTERY(-)
NC
UNREG9.6V
DC JACK
CN3
TRIG SW (B)
GND
TRIG. B SW
CN4
CN5
UNREG 9.6V
AC ADAPTER
ALARM SW
TRIGGER SW
CAM PWR CTL
GND
GND
CN8
MECHACON SECTION
GND
CAM PWR
UNREG 9.6V
CN101
21 VIDEO-1
01 MAIN (REG SECTION)
CP4 F15
CP5 F20
CP1 F15
CP2 F15
CP3 F15
C1 47/16
IC1 S-81252HG
5V REG
AL 5V TP2
C2 47/16
TP4 GND
Q5 2SJ146
R21 1M
R22 820K
L2 47
C4 47/16
DD1 DC-DC CONVERTOR
UNREG (MOTOR)
CAPSTAN REG
CAP. PWR UP
CAP. POWER
CAP. REFERENCE
GND
DRUM REG
DRUM ERROR
DRUM POWER
DRUM PWR UP
UNREG (5V)
5V REG
POWER ON
REG 5V
GND
C15 0.47/25
C7 82/10
C6 82/10
L1 47
C5 82/10
C16 22/20
C3 47/16
R17 1M
Q4 2SJ146
IC2 M5236ML
COMP
GND
R20 820K
R4 REG 8V
R15 12K
R4 1K
R3 8.2K
C10 0.1
R19 1K
R1 220
Q1 2SB1009(PQ)
C8 0.047
C9 82/10
Q3 DTC144EU
D2 FMN1
TP1 REG 5V
TP3 REG 8V
TP5 GND
RM8 BATTERY CHECK
MR1 POWER ON (H)
RM3 REG 5V
RM5 REG 8V
RM2 UNSW 5V
RM4 UNREG 9.6V
RM6 GND (MOTOR)
RM7 GND (SIGNAL)
MECHACON SECTION
RA1 REG 5V
RA2 REG 8V
RA3 GND
AUDIO SECTION
CN17
CN15
UNREG 9.6V
REG 8V
02 Y/C CN7
CN5
RS11 REG 5V
RS10 REG 8V
SR2 CAPSTAN POWER UP
RS3 CAPSTAN POWER
SR4 CAPSTAN REFERENCE
RS5 GND (MOTOR)
SR6 DRUM ERROR
RS7 DRUM POWER
SR8 DRUM POWER UP
RS12 GND (SIGNAL)
SERVO SECTION

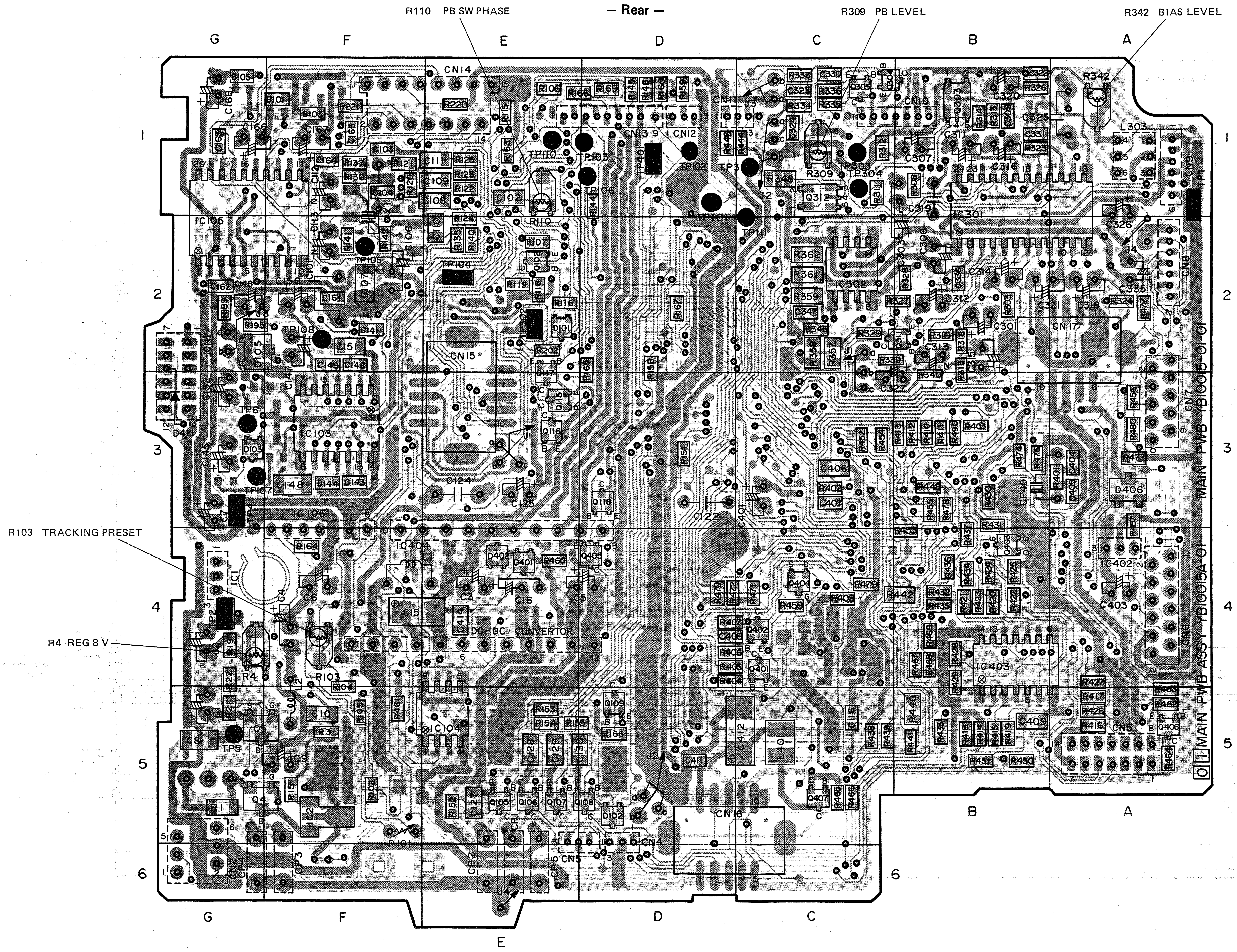
4.13 MECHACON SCHEMATIC DIAGRAM


REC/PB 5.3 Vp-p
REC/PB 5.8 Vp-p
REC/PB 4.0 Vp-p
0 1 MAIN (MECHACON SECTION)
REG SECTION
BATTERY CHECK
POWER ON(H)
UNSW 5V
REG 5V
UNREG 9.6V
REG 8V
MOTOR GND
SIGNAL GND
MG
OPERATION UNIT
POWER
REC
Q. REV
EJECT
MONITOR
SP - EP
STOP
REW
FF
PLAY
PAUSE
TRIGGER ALARM
OFF
ON
DUBBING SW
CN1
REG 5V
POWER SW(L)
KEY B
KEY A
TRIG SW
TRIG ALM
EDIT(L)
NC
GND
D411 RD6.8EB1
SERVO SECTION
CAPSTAN FG
DRUM FF
CTL PULSE
0 8 SENSOR
CN2
REEL SENSOR LED
SUPPLY REEL FG
TAKE UP REEL FG
REC SAFETY SW
CN8
From/To 0 7 TRIG, CN5
CAM PWR CTL
TRIGGER SW
ALARM SW
AC ADAPTER IN
CN4
END SENSOR
END LED
CN11
CAM SW
CAM A
CAM B
DEW SENSOR
CN254
CN253
CN5
CASSETTE LOCK SW
CN251
0 3 D MDA
CN13
NC
TEST 0
TEST 1
UNREG 9.6V
CN6
From/To LCD MODULE CN1
UNSW 5V
COUNT UP (H)
REG 5V
OUTPUT ENABLE(H)
RESET (L)
SERIAL CLOCK
COUNT PULSE
MEMORY STOP (H)
COUNTER OPERATE (L)
SERIAL DATA
CAMERA ON (H)
IC402 S-8054HN
R457 47K
C401 4.7/25
C402 0.1
C403 4.7/25
C404 33P
CF401
R401 1M
C405 33P
R403 1K
R402 15K
C406 0.047
R406 0.47K
R408 47K
C407 0.0033
C408 0.0047
R407 100K
R404 4.7K
R405 10K
R489 1M
R409 1K
Q401 2SA1576
Q402 2SC4081
R410 10K
R412 10K
R411 1K
R413 1K
R414 33K
R416 82K
R418 10K
R415 1K
R417 180K
R419 1K
R420 20K
R421 20K
R422 20K
R423 10K
R424 10K
R425 20K
IC403
R426 15K
R427 1K
R429 1K
R431 4.7K
R428 1M
R432 20K
R433 20K
R434 20K
R435 10K
R436 10K
R437 20K
R430 56K
R438 1K
Q403 2SK665
R439 1K
R441 1.6M
R440 82K
R442 68K
R443 OPEN
R444 15K
R445 1K
R446 15K
R447 1K
R449 1K
R450 10K
R451 470
C409 0.033
IC403 BU4584BF
R452 15K
R453 1K
R454 15K
R455 1K
R456 1K
R480 1M
IC401 M50966-150FP
INPUTS
OUTPUTS
Vcc
RESET(L)
X IN
X OUT
POWER SW ON (L)
REMOCON
SERIAL CLOCK
CAPSTAN FG
DRUM FF
A/D VREF
KEY A
KEY B
MECHA DATA A
MECHA DATA B
END SENSOR
BATTERY CHECK
CAM A
CAM B
CAM C
SUPPLY REEL FG
CTL PULSE
TEST 0
TEST 1
FADER MODE (H)
GND
NC
POWER ON (H)
CAPSTAN FWD (L)
CAPSTAN REV (L)
REMOTE PAUSE (L)
EP (H) / SP (L)
V.PULSE ON (H)
LOAD FWD (H)
LOAD REV (H)
AFTER LOADING (L)
END LED ON (L)
VIDEO PB (L)
VIDEO REC (L)
VIDEO MUTE (L)
AV REC MUTE (L)
COUNT UP (H)
COUNTER OPERATE (L)
PAUSE (H)
AUDIO EE (H)
AUDIO MUTE (H)
43	42
PB	L	L
INST	L	H
ASB	H	L
REC	H	H
SEARCH (H)
CAPSTAN CONTROL MECHACON(H) / SERVO (L)
REC CTL PULSE DUTY 65 %(H) / 55 %(L)
BATTERY ALARM(H)
TAPE END(H)
REC INDICATE (H)
FADER REQUEST
CAMERA POWER ON (H)
CAPSTAN MOTOR REFERENCE
SERIAL DATA
TRIGGER ALARM (H)
DRUM ON (H)
COUNTER OE (H)
Q404 2SK665
Q405 DTA124EU
R458 27K
D401 DA204U
D402 DAN202U
LD V UP
TP401
R460
R462 1K
R463 1K
Q406 2SA1576
R464 270
IC404 M54543ASL
IN OUT
0 : OPEN
R465 3.3K
R466 1.5K
D406 DAP202K
L401 47
Q407 2SA1576
C412 10/10
C411 0.01
R467 10K
R468 47K
R469 47K
R479 10K
C414 0.01
R470 100K
R471 10K
R472 10K
R448 100K
R473 15K
D413 1SS133
R474 47K
R475 47K
D403 DAP202U
R476 1M
R477 1K
R478 4.7K
D412 1SS133
R490 1K
CN12
MODE CONTROL MOTOR
M
CN15
REMOTE IN
REMOTE OUT
V PULSE ON(H)
CN17
VIDEO PB(L)
VIDEO REC (L)
VIDEO MUTE(L)
DUBBING (L)
From/To 0 2 Y/C CN5 CN7 CN6
CN16
REC 8V
REC MUTE(L)
SP(L)/ EP(H)
REC/PB 9.9 Vp-p
AV REC MUTE (L)
AUDIO EE (H)
SP(L) / EP(H)
AUDIO MUTE(H)
AUDIO SECTION
SERVO MODE A
CAPSTAN FWD(L)
SERVO MODE 1
CAPSTAN REV(L)
SEARCH (H)
SP(L) / EP(H)
CAP M(H)/S(L)
V PULSE ON (H)
REC CTL DUTY
PAUSE (H)
CAP M REF
SERVO SECTION
CN7
VIDEO REC (L)
REC INDICATE(L)
FADER REQUEST
SP(L) / EP(H)
VIDEO PB (L)
FADER MODE(H)
A FADER CTL
TAPE END (H)
BATTERY ALARM (H)
NC
From/To 2 4 IND-1 CN401
To AUDIO SECTION
CN5
DRUM ON (H)
To 0 3 DRUM MDA CN251
REC/PB 5.3 Vp-p

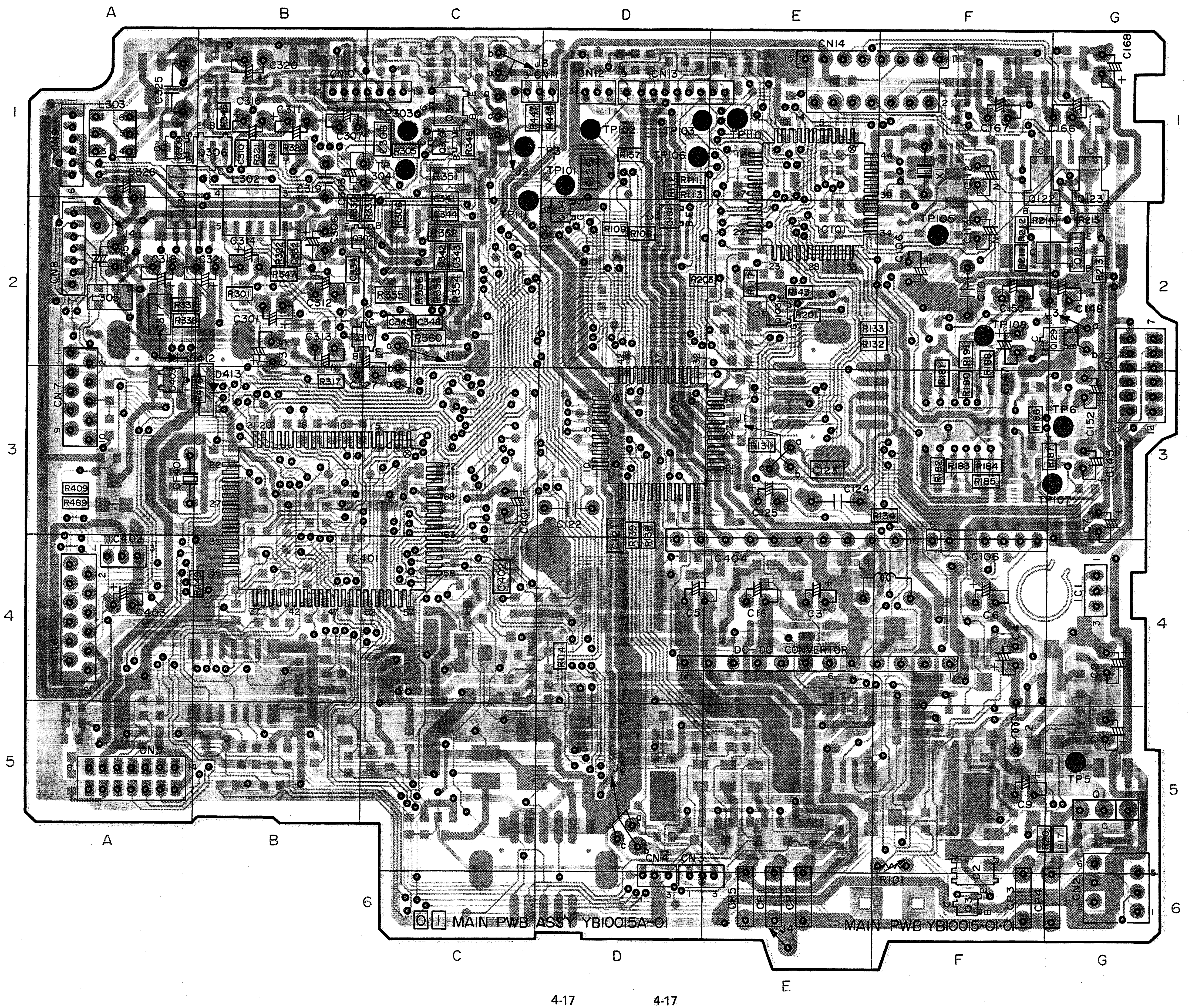
4.14 SERVO SCHEMATIC DIAGRAM


01 MAIN (SERVO SECTION)
A/C HEAD
CTL HEAD
AUDIO HEAD
ERASE HEAD
AUDIO SECTION
IC 103 M51798FP
D105 MA704
D103 MA143
IC106 AFZ72F45A1
45Hz TRAP
IC 105 VC5026G
Q123, Q122, Q121 2SB798
TP108 CTL PULSE
Q129 DTC144EU
IC 104 NJM2904E
TP107 CAPSTAN FG
Q102 2SC4081
TP 105 DRUM P/D
IC 101 BU3767K
IC 102 M51799FP
Q103 2SK665
TP104 CAP P/D
TP110 CAPSTAN REF
TP101 SW A
TP102 CTL DL REF
TP103 CTL DLY
TP 106 DISCHARGE PULSE
2SK665 Q104
TP111 DRUM FF
Q105 Q106 Q107 Q108
Q109
Q101
R101 TRACKING
R110 PB SW PHASE
R103 TRACKING PRESET
R162 CTL DELAY
D101 MA141WK
D102 MA141WA
Q101 DTA124EU
Q105, Q106, Q107, Q108, Q109 Q118, Q117, Q116, Q115 DTC144EU
MECHACON SECTION
SEARCH (H)
SERVO MODE A
SERVO MODE 1
SP(L)/EP(H)
V PULSE ON(H)
PAUSE (H)
REC CTL DUTY
CAP M (H)/S(L)
CAP M REF
CAPSTAN REV (L)
CAPSTAN FWD (L)
CTL PULSE
CAPSTAN FG
DRUM FF
From/To 02 Y/C, CN7
GND
VIDEO REC (L)
DUBBING (L)
VIDEO PB (L)
V PULSE
REG 5V
VIDEO MUTE (L)
UNREG 9.6V
GND
COMP SYNC
From/To 02 Y/C, CN5
GND
FSC
REMOTE IN
NC
PHONE OUT
REG 8V
AUDIO GND
V PULSE ON (H)
REMOTE OUT
AUDIO SECTION
REG SECTION
MECHACON SECTION
From/To CAP MOTOR
COIL 2
HG 1 (-)
COIL 3
HG 2 (+)
HG BIAS (+)
HG BIAS (-)
HG 2 (-)
HG 1 (+)
HG 3 (-)
COIL 1
HG 3 (+)
MR 1
MR BIAS (+)
MR 2
MR BIAS (-)
REG SECTION
GND (SIGNAL)
REG 5V
REG 8V
CAPSTAN POWER UP
CAPSTAN POWER
CAPSTAN REFERENCE
GND (MOTOR)
DRUM ERROR
DRUM POWER
DRUM POWER UP
From/To 02 Y/C CN6
SW-A
REC 8V
SW-B
REC MUTE (L)
SW C
SP(L)/EP(H)
SW D
NC
DRUM FF
GND
From/To 03 DRUM MDA CN 251
SENSOR GND
MOTOR GND
END SENSOR LED
SIGNAL GND
EMERGENCY
CASSETTE SW
DRUM ON (H)
DEW SENSOR
DRUM PG
DRUM ERROR
DRUM FG
DRUM REFERENCE
REG 5V
DRUM POWER
NC
UNREG 9.6V
CHECK
1/2 PB CTL
PB CTL PULSE
CTL DUTY REF
TRACKING PRESET
TEST 1
TEST 0
GND
MECHACON SECTION
PB 1.4 Vp-p
REC 3.2 Vp-p
REC 1.8 Vp-p
PB 2.1 Vp-p
REC/PB 5.5 Vp-p
REC/PB 5.4 Vp-p
REC/PB 5.5 Vp-p
REC 4.3 Vp-p
PB 4.1 Vp-p
REC 3.8 Vp-p
PB 4.1 Vp-p
REC/PB 5.5 Vp-p
DC 9.4 V
DC 1.8 V
REC/PB 5.3 Vp-p
DC 2.7 V
REC 3.8 Vp-p
PB 4.0 Vp-p
REC/PB 4.3 Vp-p
REC/PB 5.4 Vp-p
REC/PB 4.1 Vp-p
REC/PB 4.5 Vp-p
REC/PB 4.4 Vp-p
REC/PB 5.3 Vp-p
REC/PB 5.3 Vp-p
REC/PB 5.3 Vp-p
REC 5.1 Vp-p
REC 3.5 Vp-p
PB 3.4 Vp-p
REC/PB 5.4 Vp-p
REC 4.2 Vp-p
PB 4.2 Vp-p
REC/PB 5.4 Vp-p
REC/PB 5.3 Vp-p

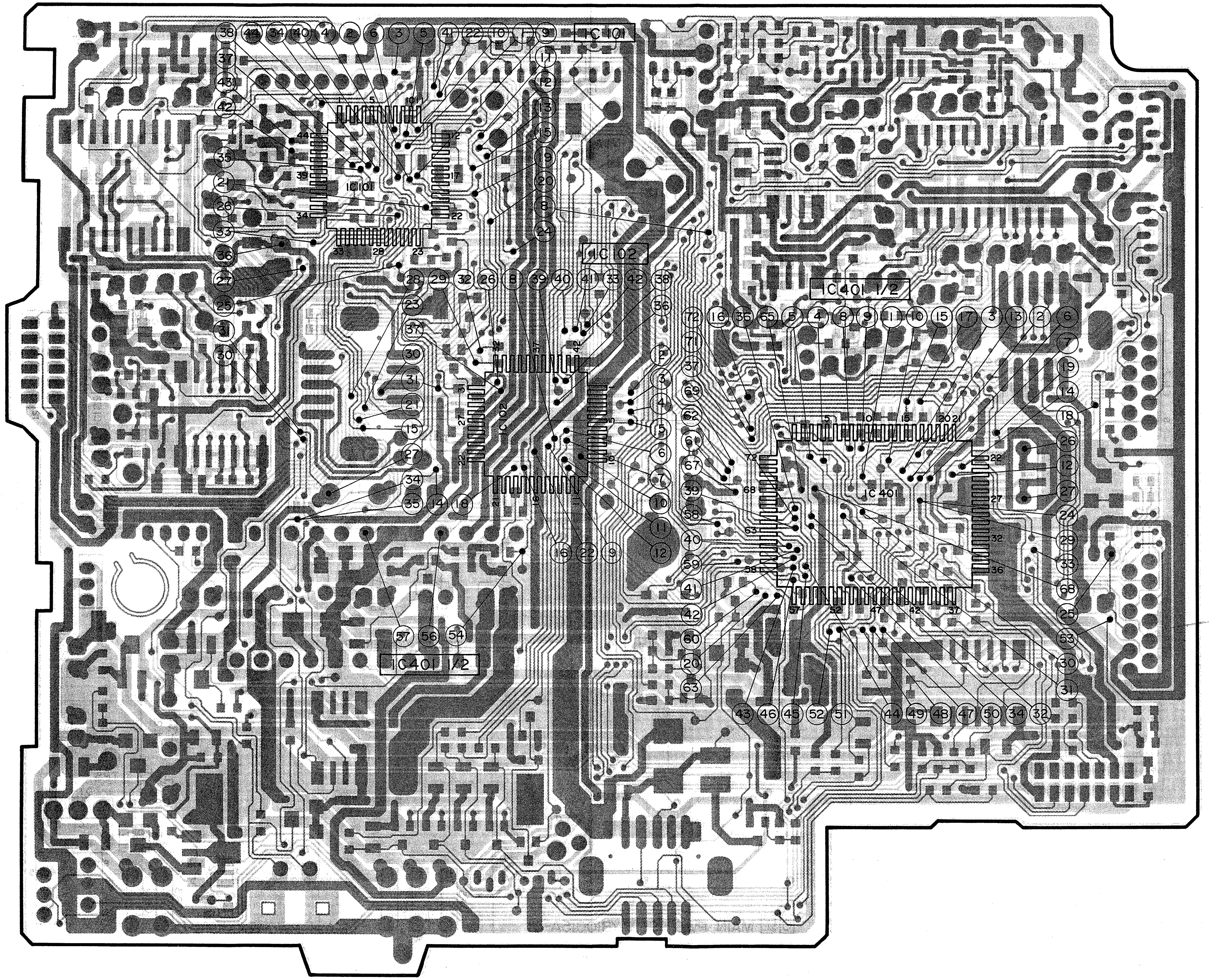
4.15 MAIN CIRCUIT BOARD


R110 PB SW PHASE
— Rear —
R309 PB LEVEL
R342 BIAS LEVEL
R103 TRACKING PRESET
R4 REG 8 V
G
F
E
D
C
B
A
1
2
3
4
5
6
DC - DC CONVERTOR
MAIN PWB YB1005-01-01
MAIN PWB ASSY YB1005A-01
01MAIN
IC101
IC103
IC104
IC105
IC106
IC301
IC302
IC402
IC403
IC404
CN1
CN2
CN4
CN5
CN6
CN7
CN8
CN9
CN10
CN11
CN12
CN13
CN14
CN15
CN16
CN17
TP1
TP3
TP5
TP6
TP101
TP102
TP103
TP104
TP105
TP106
TP107
TP108
TP110
TP111
TP302
TP303
TP304
TP401
J2
U1
U4
L303
L401

— Front —


A
B
C
D
E
F
G
1
2
3
4
5
6
CN14
CN10
CN11
CN12
CN13
J3
J2
J4
CN9
CN8
CN7
CN6
CN5
CN1
CN2
CN3
CN4
L303
L302
L304
L305
IC101
IC102
IC401
IC402
IC404
IC106
IC1
TP303
TP304
TP3
TP101
TP102
TP103
TP106
TP110
TP111
TP105
TP108
TP6
TP107
TP5
C320
C325
C316
C311
C307
C308
C319
C326
C314
C315
C312
C313
C301
C327
C403
C401
C402
C122
C123
C124
C125
C126
C5
C16
C3
C6
C4
C2
C9
C7
C145
C152
C147
C150
C148
C167
C166
C168
Q306
Q307
Q302
Q310
Q104
Q122
Q123
Q121
Q129
Q1
Q2
Q3
D403
D412
D413
CF401
X1
R409
R489
R449
R479
R337
R338
R301
R317
R347
R355
R360
R351
R352
R354
R305
R346
R447
R445
R157
R109
R108
R111
R113
R203
R201
R143
R133
R132
R131
R134
R139
R138
R114
R101
R186
R187
R188
R182
R183
R184
R185
R214
R215
R211
R212
R213
R20
R17
CP1
CP2
CP3
CP4
CP5
DC-DC CONVERTOR
O I MAIN PWB ASSY YB10015A-01
MAIN PWB YB10015-01-01

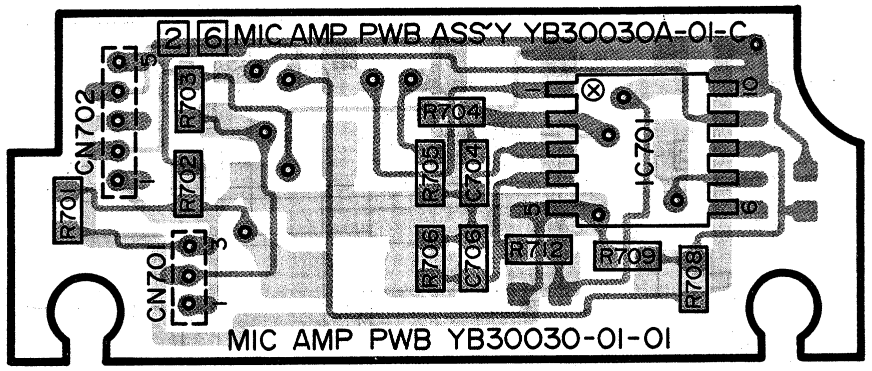
4.16 MAIN BOARD THROUGH HOLE LOCATION


IC101
IC102
IC401 1/2
IC401
IC401 1/2

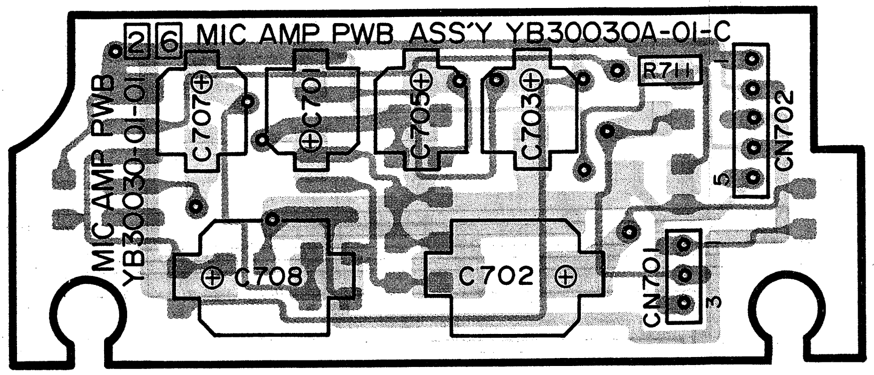
4.17 MIC AMP, MIC JACK, TRIGGER & JACK CIRCUIT BOARDS

— MIC AMP —

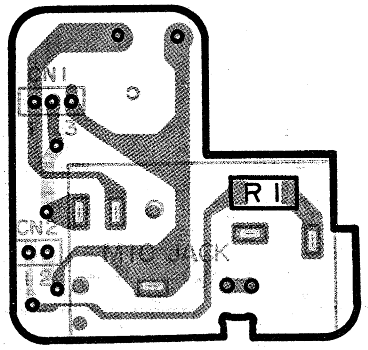
— Rear —


2 6 MIC AMP PWB ASS'Y YB30030A-01-C
CN702
R703
R704
R705
C704
IC701
R702
R701
CN701
R706
C706
R712
R709
R708
MIC AMP PWB YB30030-01-01

— Front —

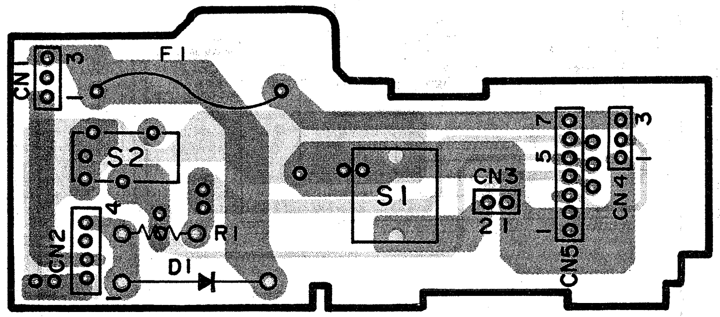

2 6 MIC AMP PWB ASS'Y YB30030A-01-C
MIC AMP PWB YB30030-01-01
C707
C701
C705
C703
R711
CN702
C708
C702
CN701

— MIC JACK —


CN1
R1
CN2
MIC JACK

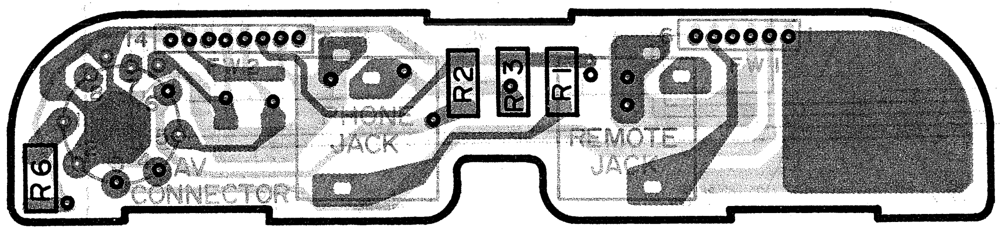
0 5 MIC JACK PWB ASS'Y YB20079A1
MIC JACK PWB YB20079-01-01

— TRIGGER —


CN1
F1
S2
S1
CN3
CN4
CN5
CN2
R1
D1

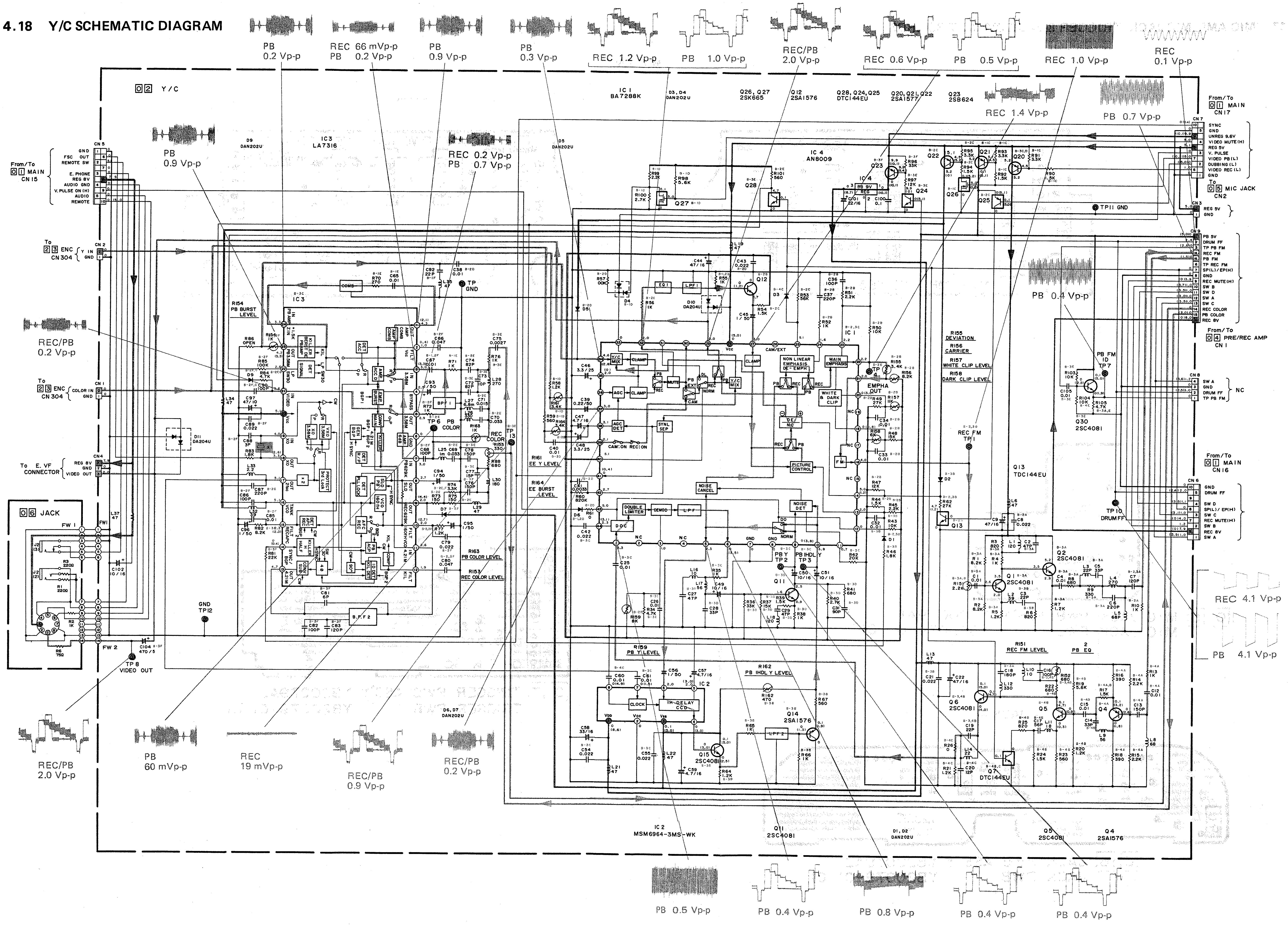
0 7 TRIGGER PWB ASS'Y YB20079A3
TRIGGER PWB YB20079-01-01

— JACK —

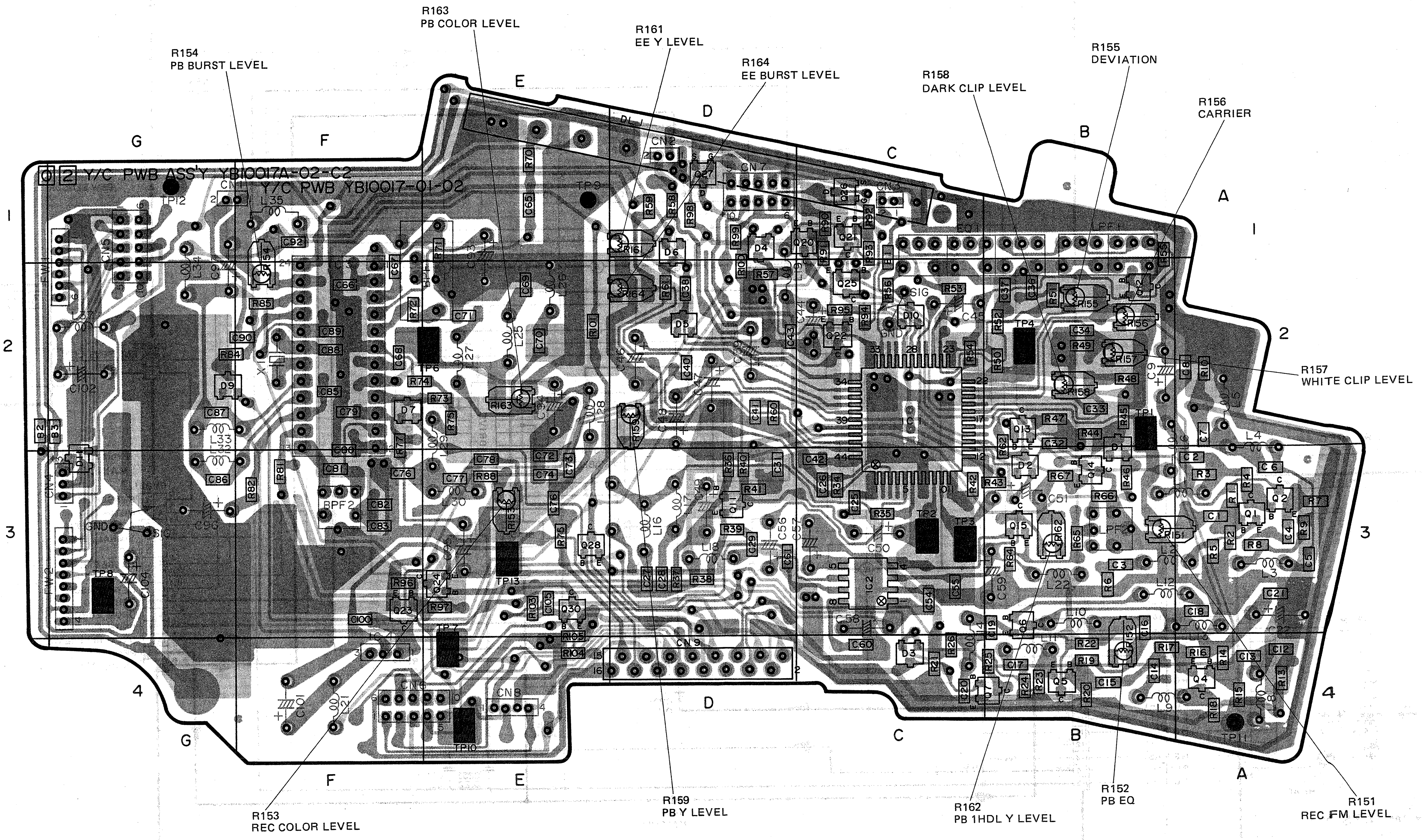

R2
R3
R1
R6
TONE JACK
REMOTE JACK
AV CONNECTOR

0 6 JACK PWB ASS'Y YB20079A2
JACK PWB YB20079-01-01

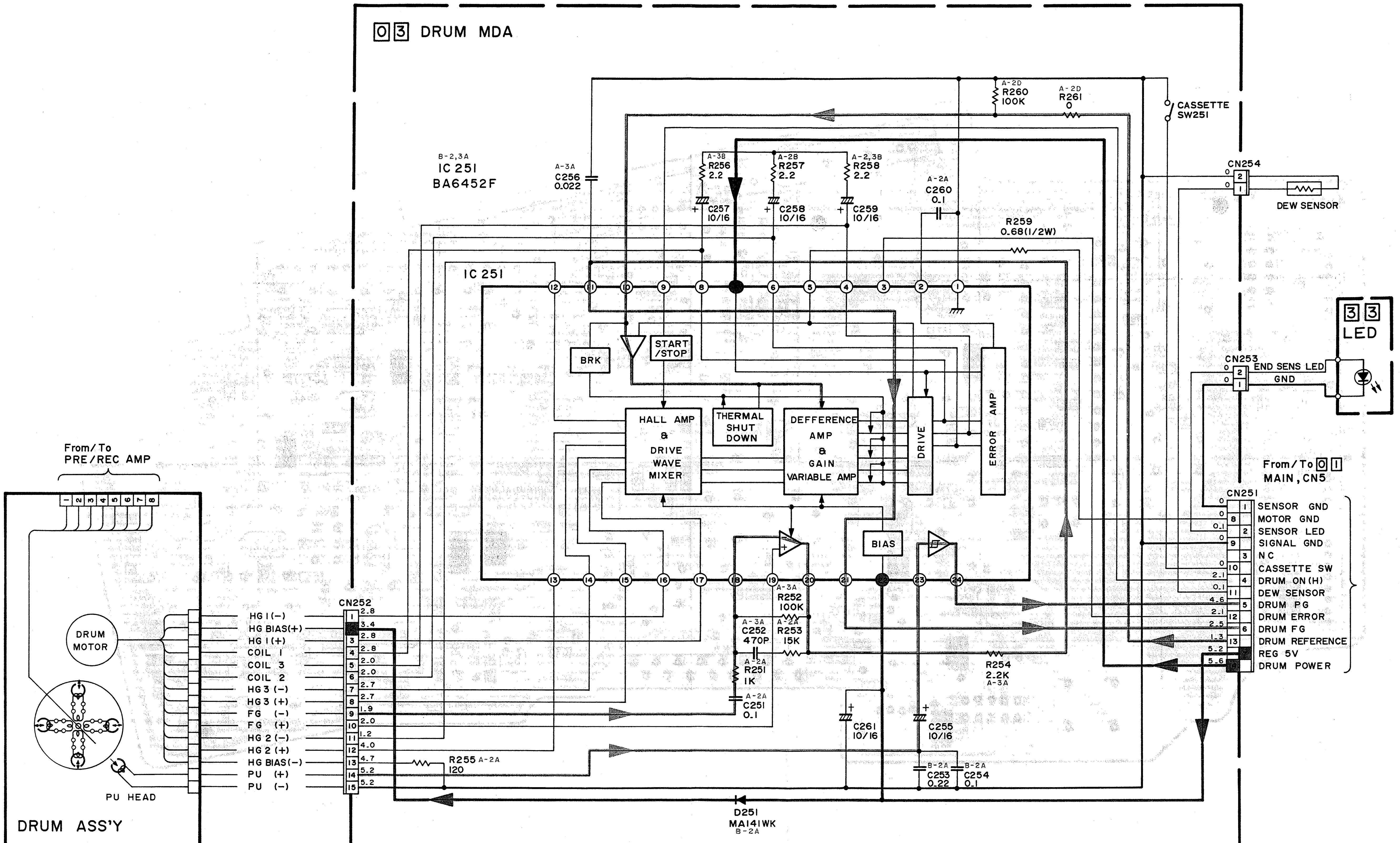
4.18 Y/C SCHEMATIC DIAGRAM


PB 0.2 Vp-p
REC 66 mVp-p
PB 0.2 Vp-p
PB 0.9 Vp-p
PB 0.3 Vp-p
REC 1.2 Vp-p
PB 1.0 Vp-p
REC/PB 2.0 Vp-p
REC 0.6 Vp-p
PB 0.5 Vp-p
REC 1.0 Vp-p
REC 0.1 Vp-p
02 Y/C
IC1 BA7288K
D3, D4 DAN202U
Q26, Q27 2SK665
Q12 2SA1576
Q28, Q24, Q25 DTC144EU
Q20, Q21, Q22 2SA1577
Q23 2SB624
REC 1.4 Vp-p
PB 0.7 Vp-p
From/To 01 MAIN CN17
SYNC
GND
UNREG 9.6V
VIDEO MUTE(H)
REG 5V
V. PULSE
VIDEO PB(L)
DUBBING(L)
VIDEO REC(L)
GND
To 05 MIC JACK CN2
REG 5V
GND
PB 5V
DRUM FF
TP PB FM
REC FM
PB FM
TP REC FM
SP(L)/EP(H)
GND
REC MUTE(H)
SW B
SW D
SW A
SW C
REC COLOR
PB COLOR
REC 8V
PB 0.4 Vp-p
From/To 04 PRE/REC AMP CN1
SW A
GND
DRUM FF
TP PB FM
NC
From/To 01 MAIN CN16
GND
DRUM FF
SW D
SP(L)/EP(H)
SW C
REC MUTE(H)
SW B
REC 8V
SW A
REC 4.1 Vp-p
PB 4.1 Vp-p
From/To 01 MAIN CN15
GND
FSC OUT
REMOTE SW
E. PHONE
REG 8V
AUDIO GND
V. PULSE ON (H)
AUDIO
REMOTE
PB 0.9 Vp-p
D9 DAN202U
IC3 LA7316
REC 0.2 Vp-p
PB 0.7 Vp-p
D5 DAN202U
IC4 AN8009
To 23 ENC CN304 Y IN GND
To 23 ENC CN304 COLOR IN GND
REC/PB 0.2 Vp-p
To E. VF CONNECTOR REG 8V GND VIDEO OUT
06 JACK
FW1
FW2
TP8 VIDEO OUT
GND TP12
TP GND
TP6 PB COLOR
REC COLOR TP13
R154 PB BURST LEVEL
R161 EE Y LEVEL
R164 EE BURST LEVEL
R163 PB COLOR LEVEL
R153 REC COLOR LEVEL
R155 DEVIATION
R156 CARRIER
R157 WHITE CLIP LEVEL
R158 DARK CLIP LEVEL
PB FM ID TP7
Q30 2SC4081
REC FM TP1
Q13 TDC144EU
TP10 DRUM FF
TP11 GND
EMPHA OUT
PB Y TP2
PB IHDL Y TP3
Q11
R159 PB Y LEVEL
R162 PB IHDL Y LEVEL
IC2
CLOCK
1H DELAY CCD
Q14 2SA1576
Q15 2SC4081
R151 REC FM LEVEL
2 PB EQ
Q6 2SC4081
Q5
Q4
Q7 DTC144EU
Q2 2SC4081
Q1 2SC4081
Y/C MIX
CLAMP
AGC
AGC DET
SYNC SEP
CAM:ON REC:ON
DOUBLE LIMITER
DEMOD
LPF
DOC
NOISE CANCEL
NOISE DET
PICTURE CONTROL
NON LINEAR EMPHASIS DE-EMPH
MAIN EMPHASIS
WHITE & DARK CLIP
DE/NC
FM
EQ1
LPF1
LPF2
COMB
BPF1
BPF2
KILLER
ACC DET
VXO
CW-90°
PB 60 mVp-p
REC 19 mVp-p
REC/PB 2.0 Vp-p
REC/PB 0.9 Vp-p
REC/PB 0.2 Vp-p
D6, D7 DAN202U
IC2 MSM6964-3MS-WK
Q11 2SC4081
D1, D2 DAN202U
Q5 2SC4081
Q4 2SA1576
PB 0.5 Vp-p
PB 0.4 Vp-p
PB 0.8 Vp-p
PB 0.4 Vp-p
PB 0.4 Vp-p

4.19 Y/C CIRCUIT BOARD


R163
PB COLOR LEVEL
R161
EE Y LEVEL
R154
PB BURST LEVEL
R164
EE BURST LEVEL
R158
DARK CLIP LEVEL
R155
DEVIATION
R156
CARRIER
R157
WHITE CLIP LEVEL
R153
REC COLOR LEVEL
R159
PB Y LEVEL
R162
PB 1HDL Y LEVEL
R152
PB EQ
R151
REC FM LEVEL
Y/C PWB ASS'Y YB10017A-02-C2
Y/C PWB YB10017-01-02
A
B
C
D
E
F
G
1
2
3
4
IC1
IC2
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
GND
SIG

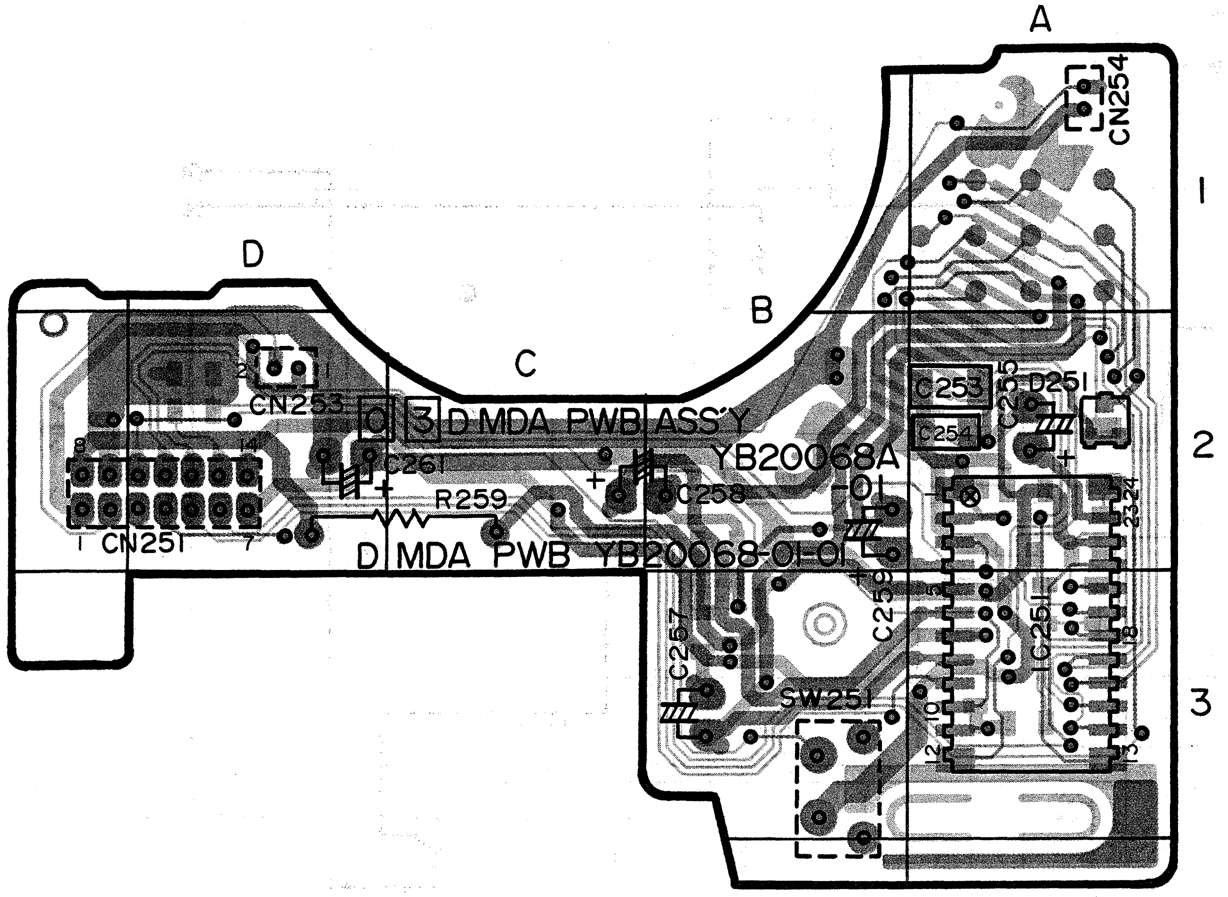
4.20 DRUM MDA SCHEMATIC DIAGRAM


03 DRUM MDA
B-2,3A
IC 251
BA6452F
A-3A
C256
0.022
A-3B
R256
2.2
A-2B
R257
2.2
A-2,3B
R258
2.2
C257
10/16
C258
10/16
C259
10/16
A-2D
R260
100K
A-2D
R261
0
CASSETTE
SW251
A-2A
C260
0.1
R259
0.68(1/2W)
CN254
DEW SENSOR
IC 251
BRK
START
/STOP
HALL AMP
&
DRIVE
WAVE
MIXER
THERMAL
SHUT
DOWN
DEFFERENCE
AMP
&
GAIN
VARIABLE AMP
DRIVE
ERROR AMP
BIAS
33
LED
CN253
END SENS LED
GND
From/To 01
MAIN, CN5
CN251
SENSOR GND
MOTOR GND
SENSOR LED
SIGNAL GND
NC
CASSETTE SW
DRUM ON (H)
DEW SENSOR
DRUM PG
DRUM ERROR
DRUM FG
DRUM REFERENCE
REG 5V
DRUM POWER
From/To
PRE/REC AMP
DRUM
MOTOR
PU HEAD
DRUM ASS'Y
CN252
HG1(−)
HG BIAS(+)
HG1(+)
COIL 1
COIL 3
COIL 2
HG3(−)
HG3(+)
FG (−)
FG (+)
HG2(−)
HG2(+)
HG BIAS(−)
PU (+)
PU (−)
A-3A
R252
100K
A-2A
R253
15K
A-3A
C252
470P
A-2A
R251
1K
A-2A
C251
0.1
R254
2.2K
A-3A
C261
10/16
C255
10/16
B-2A
C253
0.22
B-2A
C254
0.1
R255 A-2A
120
D251
MA141WK
B-2A

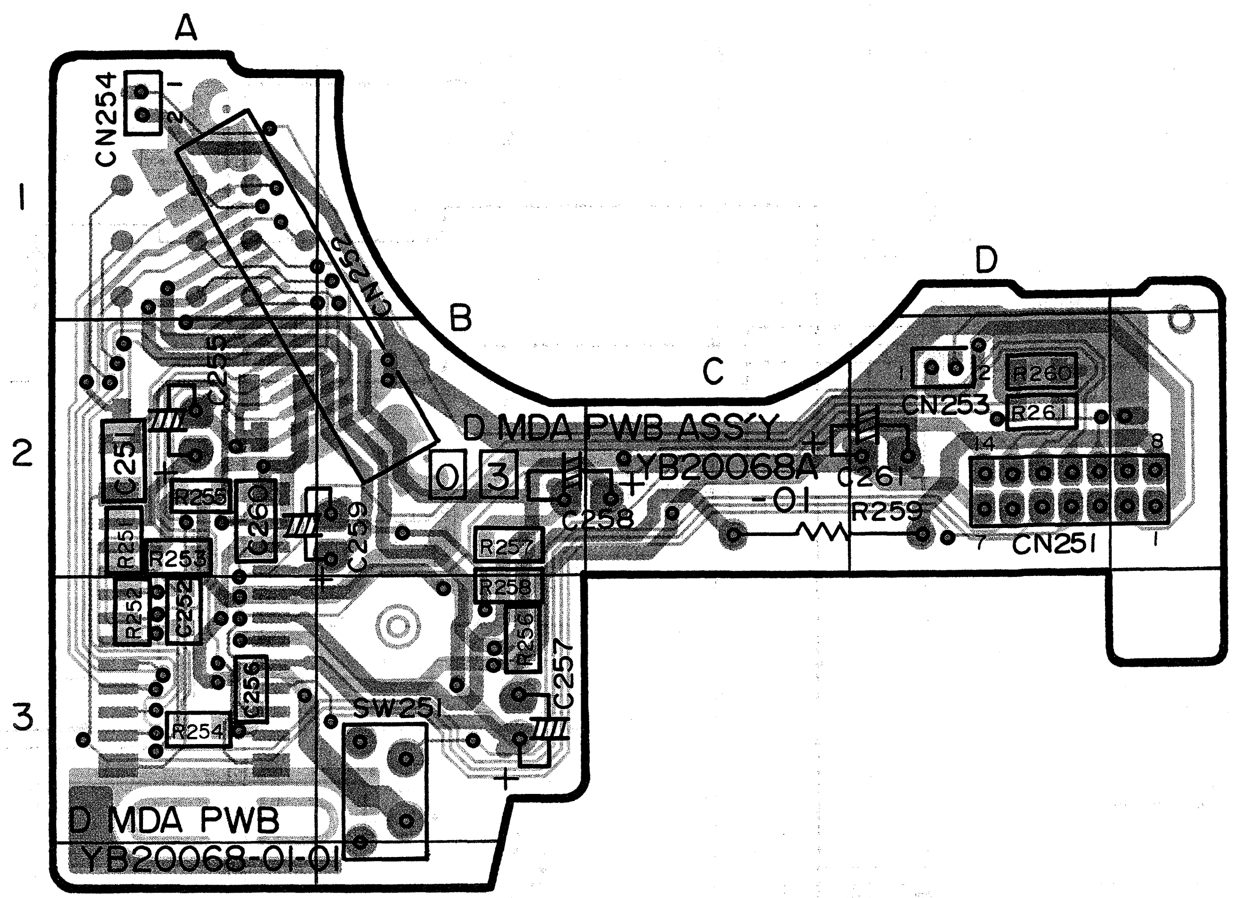
4.21 DRUM MDA & UPPER DRUM CIRCUIT BOARD

– DRUM MDA –

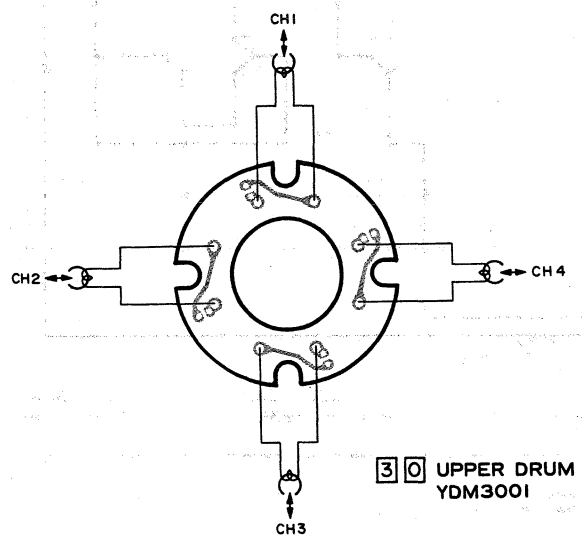
– Rear –


A
B
C
D
1
2
3
CN254
CN253
CN251
C261
R259
C258
C253
C254
C255
D251
C259
C257
SW251
C251
IC251
3 0 D MDA PWB ASS'Y
YB20068A
-01
D MDA PWB YB20068-01-01

– Front –

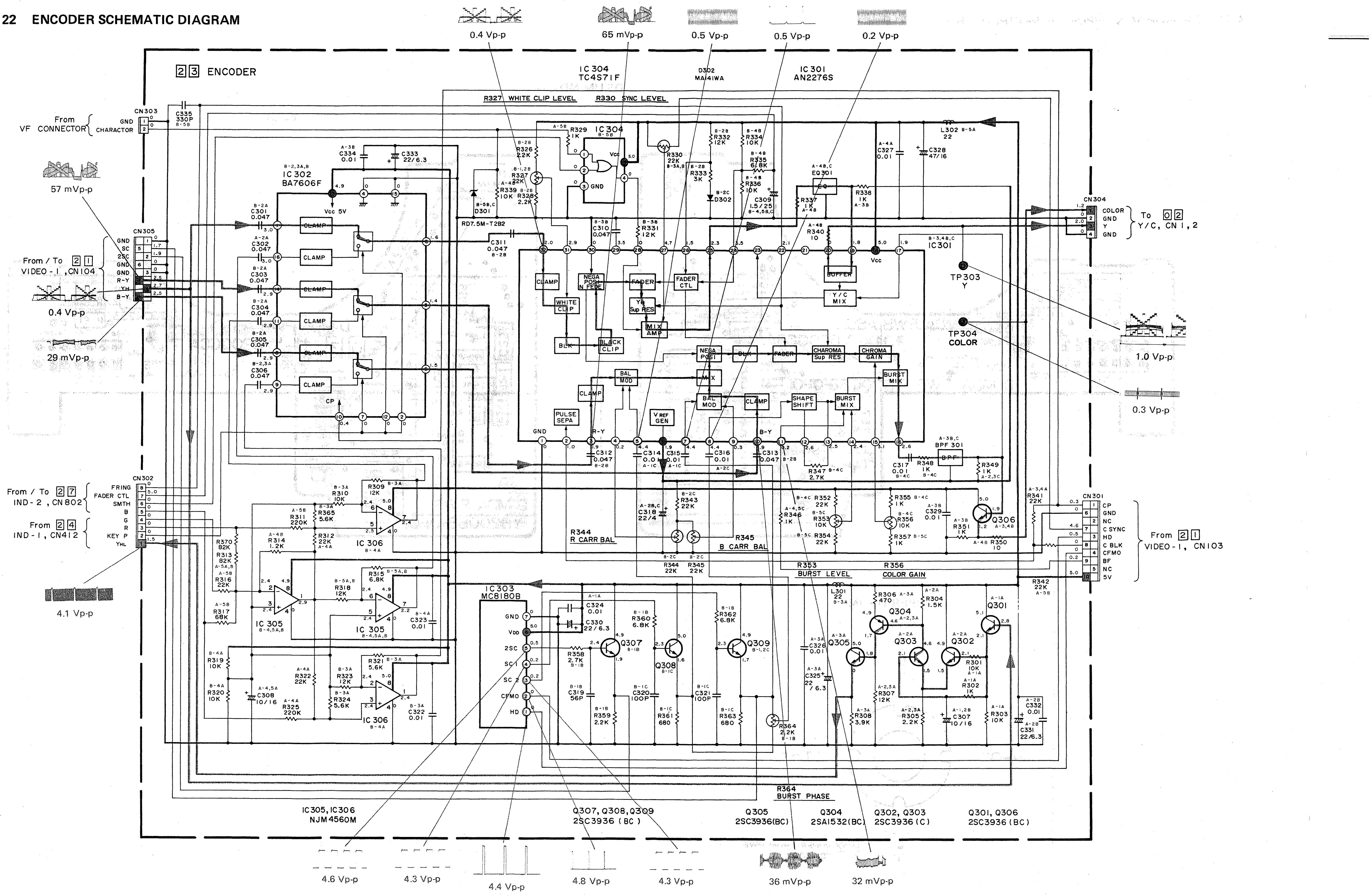

A
B
C
D
1
2
3
CN254
CN252
CN253
CN251
R260
R261
C261
R259
C258
C251
C252
C255
C256
C257
C259
C260
R251
R252
R253
R254
R255
R256
R257
R258
SW251
D MDA PWB ASS'Y
0 3
YB20068A
-01
D MDA PWB
YB20068-01-01

– UPPER DRUM –


CH1
CH2
CH3
CH4

3 0 UPPER DRUM PWB
YDM3001

4.22 ENCODER SCHEMATIC DIAGRAM

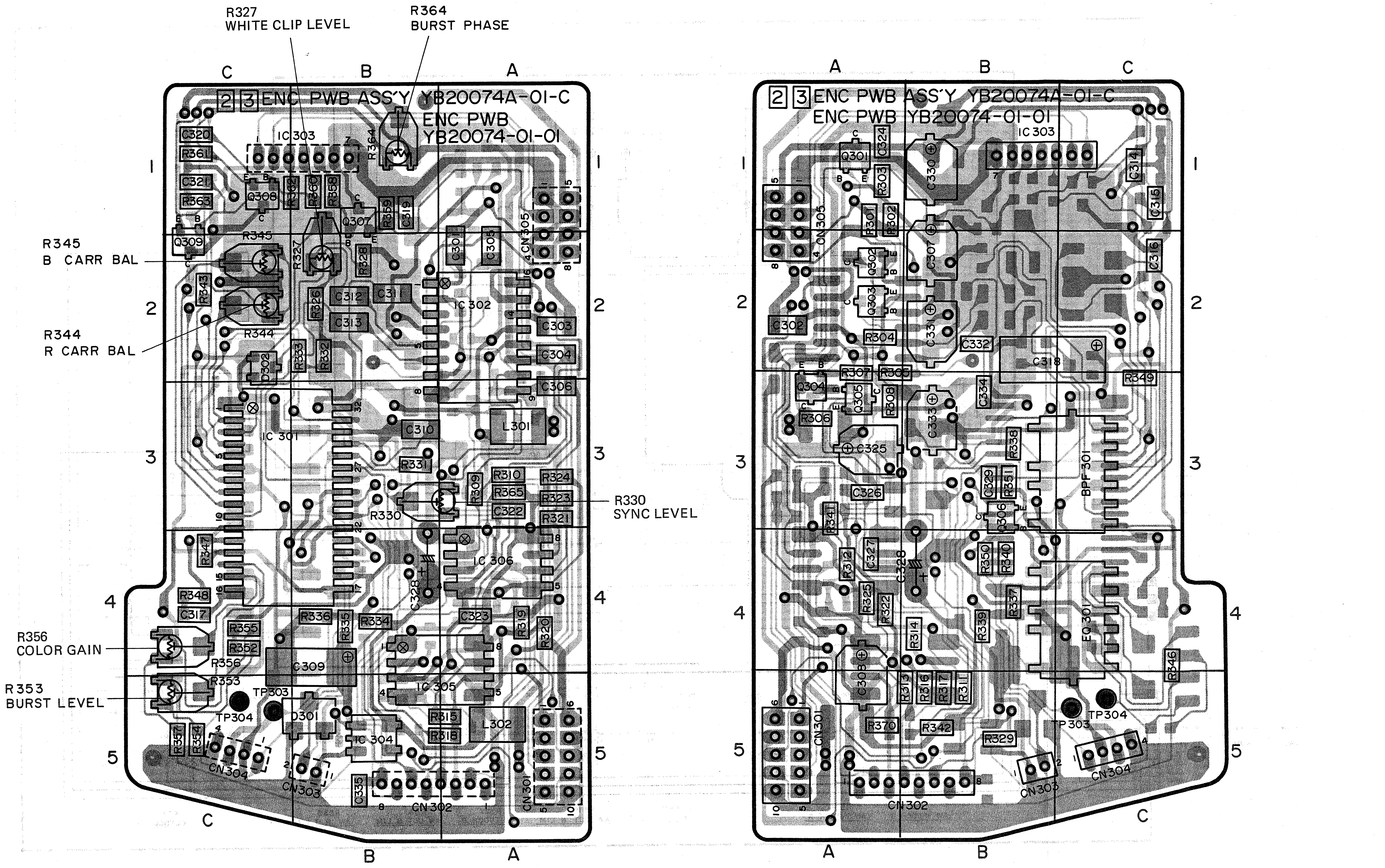


23 ENCODER
0.4 Vp-p
65 mVp-p
0.5 Vp-p
0.5 Vp-p
0.2 Vp-p
IC304 TC4S71F
D302 MA141WA
IC301 AN2276S
R327 WHITE CLIP LEVEL
R330 SYNC LEVEL
From VF CONNECTOR
GND
CHARACTOR
CN303
C335 330P
IC302 BA7606F
IC304
57 mVp-p
CN305
From / To 21 VIDEO-1, CN104
GND
SC
2SC
GND
GND
R-Y
YH
B-Y
0.4 Vp-p
29 mVp-p
CLAMP
Vcc 5V
CP
D301 RD7.5M-T2B2
C311 0.047
CLAMP
NEGA POSI N FEED
FADER
YH Sup RES
FADER CTL
WHITE CLIP
MIX AMP
BLK
BLACK CLIP
BUFFER
Y/C MIX
IC301
TP303 Y
TP304 COLOR
1.0 Vp-p
0.3 Vp-p
CN304
COLOR
GND
Y
GND
To 02 Y/C, CN1, 2
NEGA POSI
BLK
FADER
CHAROMA Sup RES
CHROMA GAIN
BAL MOD
MIX
BURST MIX
CLAMP
BAL MOD
CLAMP
SHAPE SHIFT
BURST MIX
PULSE SEPA
V REF GEN
GND
R-Y
B-Y
BPF 301
CN302
From / To 27 IND-2, CN802
FRING
FADER CTL
SMTH
B
G
R
KEY P
YHL
From 24 IND-1, CN412
4.1 Vp-p
IC306
IC305
IC303 MC6180B
GND
VDD
2SC
SC 1
SC 2
CFMO
HD
Q307
Q308
Q309
Q305
Q304
Q303
Q302
Q301
Q306
R344 R CARR BAL
R345 B CARR BAL
R353 BURST LEVEL
R356 COLOR GAIN
R364 BURST PHASE
CN301
CP
GND
NC
C SYNC
HD
C BLK
CFMO
BF
NC
5V
From 21 VIDEO-1, CN103
IC305, IC306 NJM4560M
Q307, Q308, Q309 2SC3936 (BC)
Q305 2SC3936(BC)
Q304 2SA1532(BC)
Q302, Q303 2SC3936 (C)
Q301, Q306 2SC3936 (BC)
4.6 Vp-p
4.3 Vp-p
4.4 Vp-p
4.8 Vp-p
4.3 Vp-p
36 mVp-p
32 mVp-p

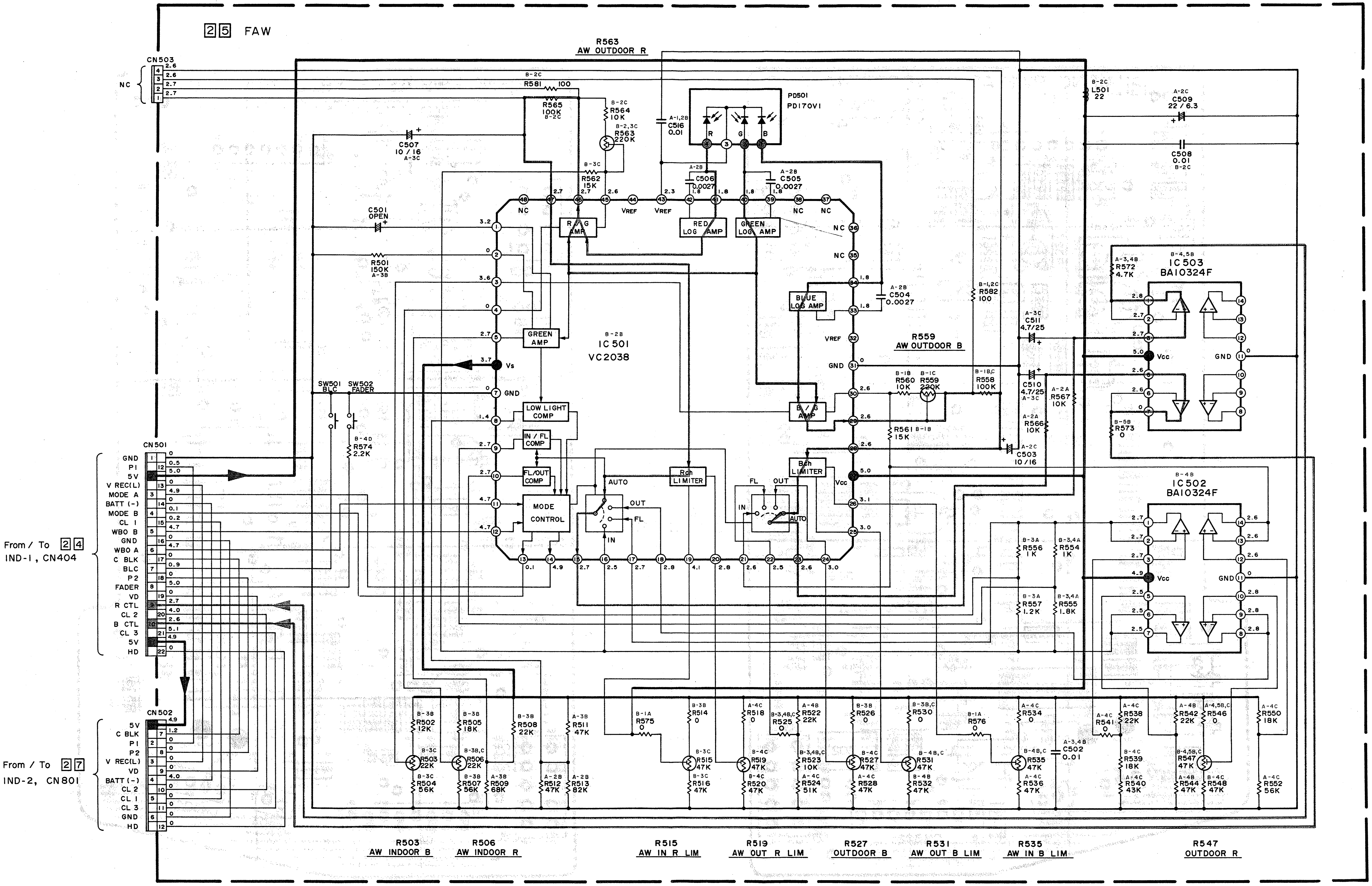
4.23 ENCODER CIRCUIT BOARD

— Rear —

— Front —


R327
WHITE CLIP LEVEL
R364
BURST PHASE
R345
B CARR BAL
R344
R CARR BAL
R330
SYNC LEVEL
R356
COLOR GAIN
R353
BURST LEVEL
2 3 ENC PWB ASS'Y YB20074A-01-C
ENC PWB
YB20074-01-01
IC 303
IC 302
IC 301
IC 306
IC 305
IC 304
L301
L302
BPF 301
EQ 301
CN301
CN302
CN303
CN304
CN305
TP303
TP304
A
B
C
1
2
3
4
5

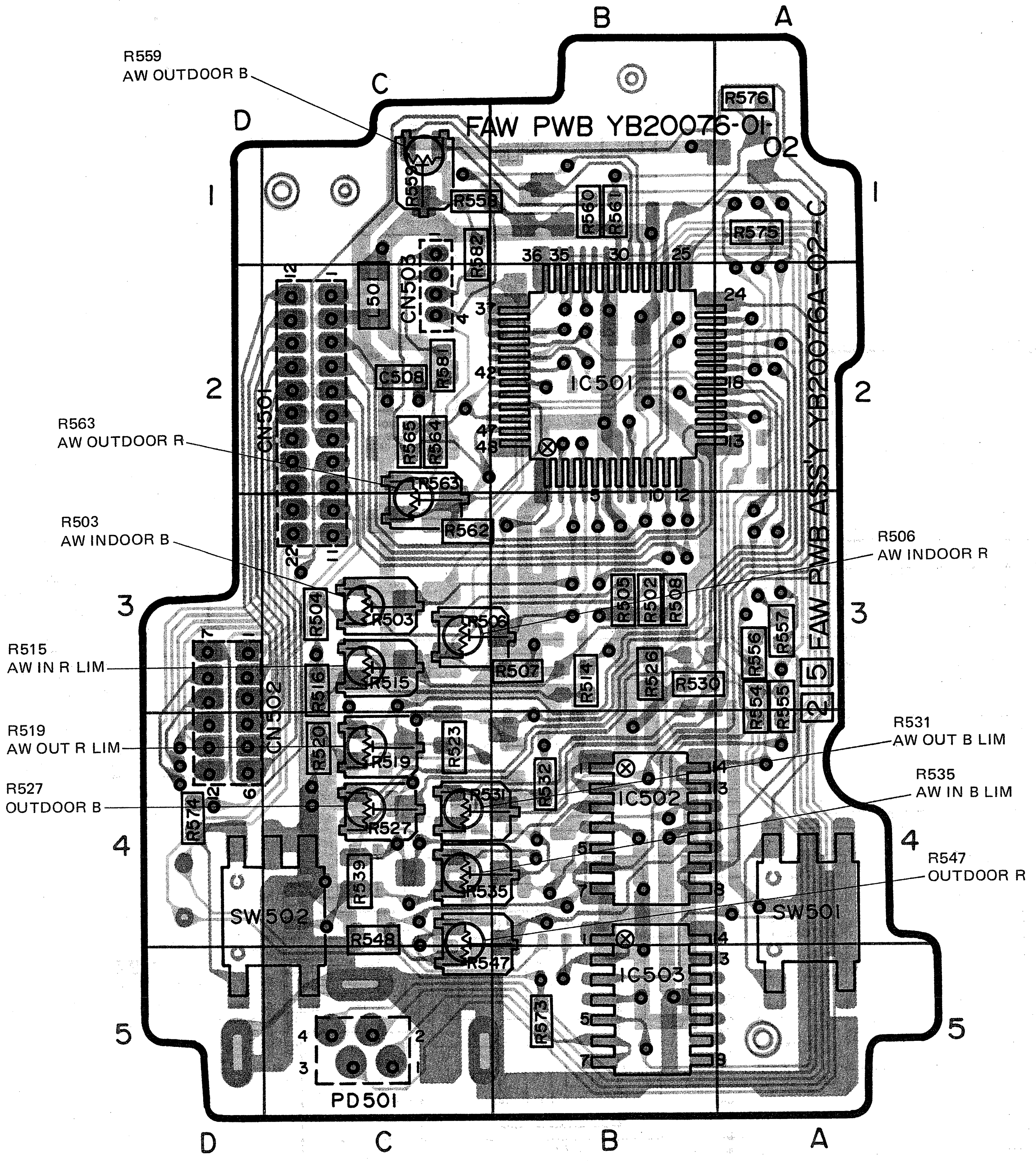
4.24 FAW SCHEMATIC DIAGRAM



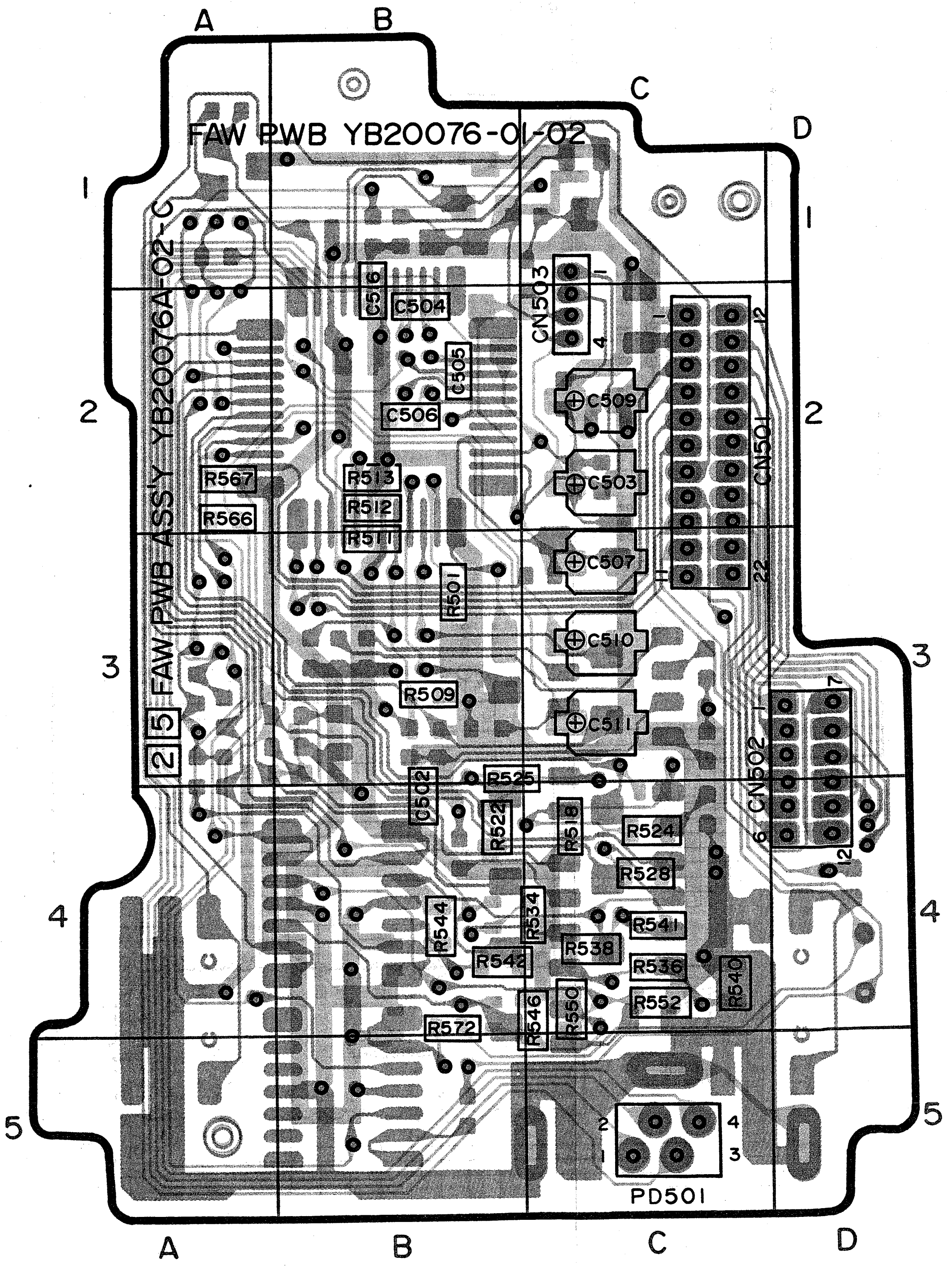
25 FAW
CN503
NC
CN501
GND
P1
5V
V REC(L)
MODE A
BATT (-)
MODE B
CL 1
WBO B
GND
WBO A
C BLK
BLC
P2
FADER
VD
R CTL
CL 2
B CTL
CL 3
5V
HD
From / To 24
IND-1, CN404
CN502
5V
C BLK
P1
P2
V REC(L)
VD
BATT (-)
CL 2
CL 1
CL 3
GND
HD
From / To 27
IND-2, CN801
R563
AW OUTDOOR R
R581 100
R565 100K
R564 10K
R563 220K
R562 15K
C507 10 / 16
C501 OPEN
R501 150K
C516 0.01
C506 0.0027
C505 0.0027
PD501
PD170V1
R
G
B
NC
VREF
R / G AMP
RED LOG AMP
GREEN LOG AMP
BLUE LOG AMP
GREEN AMP
IC501
VC2038
Vs
GND
LOW LIGHT COMP
IN / FL COMP
FL/OUT COMP
MODE CONTROL
AUTO
OUT
FL
IN
Rch LIMITER
Bch LIMITER
B / G AMP
Vcc
C504 0.0027
R559
AW OUTDOOR B
R560 10K
R559 220K
R561 15K
R558 100K
R582 100
L501 22
C509 22 / 6.3
C508 0.01
C511 4.7/25
C510 4.7/25
C503 10 / 16
R567 10K
R566 10K
R572 4.7K
R573 0
IC503
BA10324F
IC502
BA10324F
SW501 BLC
SW502 FADER
R574 2.2K
R556 1K
R554 1K
R557 1.2K
R555 1.8K
R502 12K
R505 18K
R508 22K
R511 47K
R575 0
R514 0
R518 0
R525 0
R522 22K
R526 0
R530 0
R576 0
R534 0
R541 0
R538 22K
R542 22K
R546 0
R550 18K
R503 22K
R506 22K
R504 56K
R507 56K
R509 68K
R512 47K
R513 82K
R515 47K
R516 47K
R519 47K
R520 47K
R523 10K
R524 51K
R527 47K
R528 47K
R531 47K
R532 47K
R535 47K
R536 47K
C502 0.01
R539 18K
R540 43K
R547 47K
R544 47K
R548 47K
R552 56K
R503
AW INDOOR B
R506
AW INDOOR R
R515
AW IN R LIM
R519
AW OUT R LIM
R527
OUTDOOR B
R531
AW OUT B LIM
R535
AW IN B LIM
R547
OUTDOOR R

4.25 FAW CIRCUIT BOARD

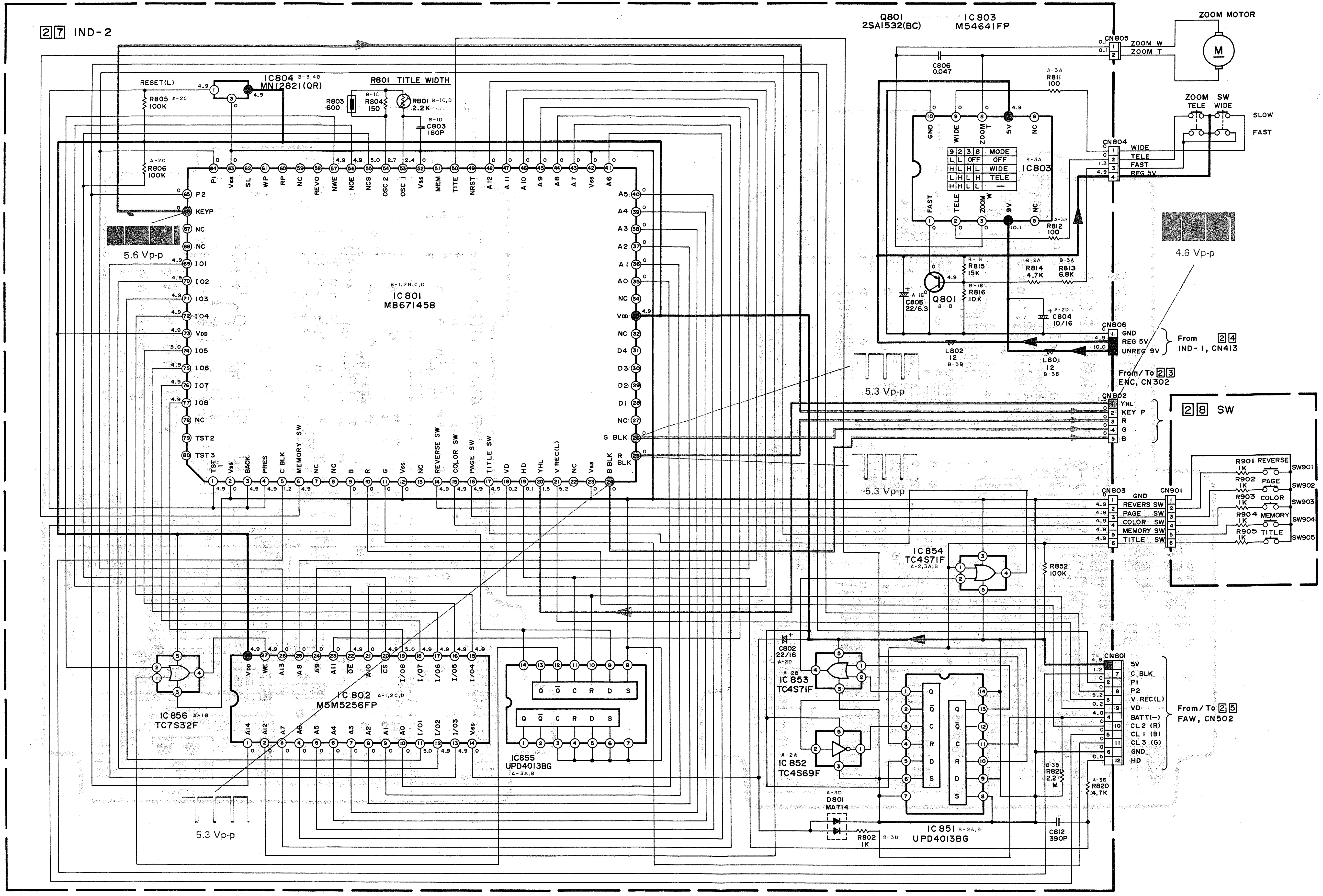
— Rear —


R559
AW OUTDOOR B
R563
AW OUTDOOR R
R503
AW INDOOR B
R506
AW INDOOR R
R515
AW IN R LIM
R519
AW OUT R LIM
R527
OUTDOOR B
R531
AW OUT B LIM
R535
AW IN B LIM
R547
OUTDOOR R
FAW PWB YB20076-01-02
FAW PWB ASS'Y YB20076A-02-C
IC501
IC502
IC503
CN501
CN502
CN503
SW501
SW502
PD501
A
B
C
D
1
2
3
4
5

— Front —


FAW PWB YB20076-01-02
FAW PWB ASS'Y YB20076A-02-C
CN501
CN502
CN503
C504
C505
C506
C503
C507
C509
C510
C511
C516
PD501
A
B
C
D
1
2
3
4
5

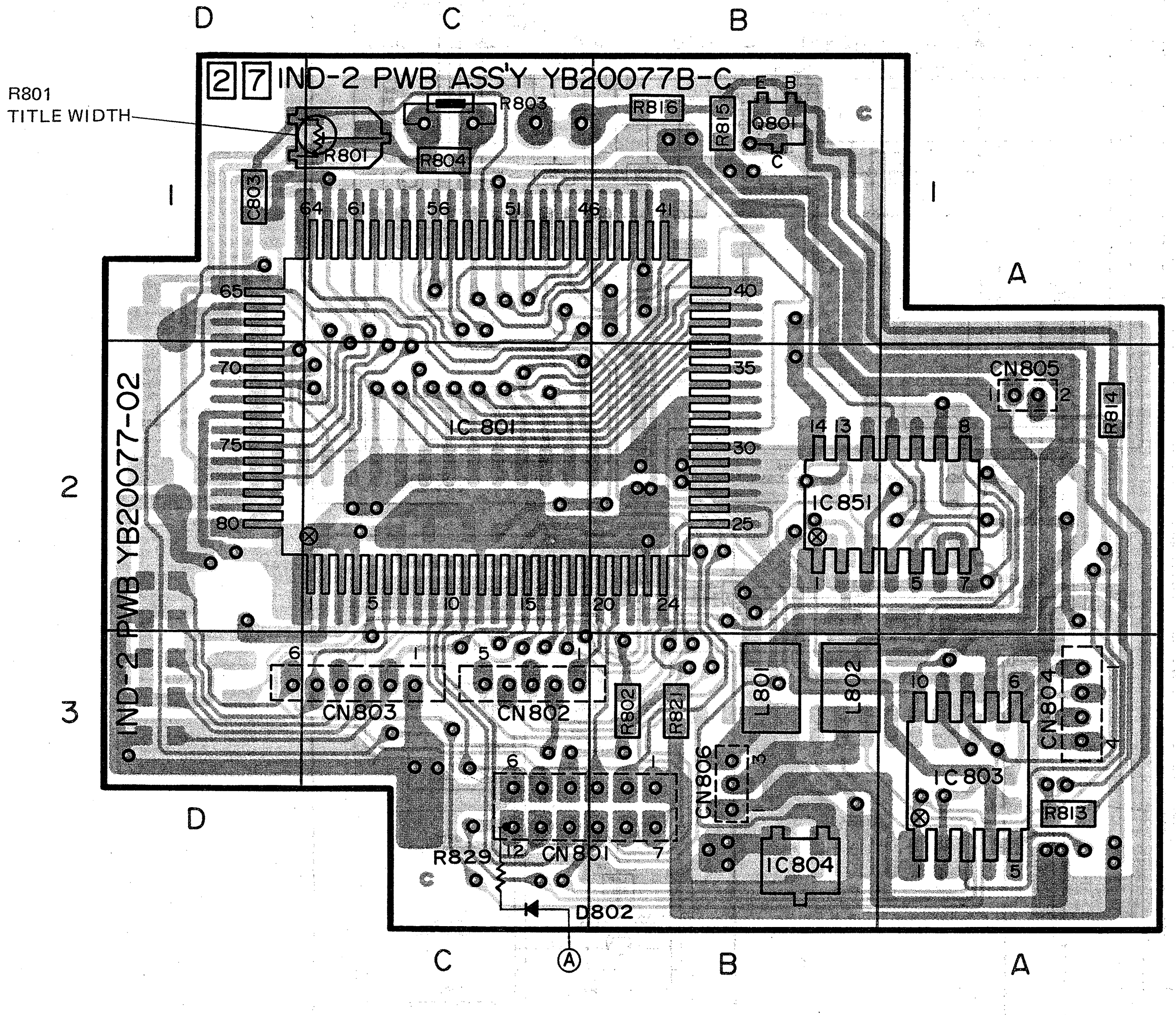
4.26 INDICATOR-2 & SWITCH SCHEMATIC DIAGRAM


27 IND-2
28 SW
RESET(L)
R805 100K
R806 100K
IC804 MN12821(QR)
R801 TITLE WIDTH
R803 600
R804 150
R801 2.2K
C803 180P
IC801 MB671458
KEYP
5.6 Vp-p
5.3 Vp-p
4.6 Vp-p
Q801 2SA1532(BC)
IC803 M54641FP
C806 0.047
R811 100
R812 100
R813 6.8K
R814 4.7K
R815 15K
R816 10K
C805 22/6.3
C804 10/16
L801 12
L802 12
MODE
OFF
WIDE
TELE
ZOOM MOTOR
CN805
ZOOM W
ZOOM T
ZOOM SW
TELE
WIDE
SLOW
FAST
CN804
REG 5V
CN806
GND
UNREG 9V
From 24 IND-1, CN413
From/To 23 ENC, CN302
CN802
YHL
KEY P
R
G
B
CN803
CN901
REVERS SW
PAGE SW
COLOR SW
MEMORY SW
TITLE SW
R901 REVERSE 1K
R902 PAGE 1K
R903 COLOR 1K
R904 MEMORY 1K
R905 TITLE 1K
SW901
SW902
SW903
SW904
SW905
IC854 TC4S71F
R852 100K
IC856 TC7S32F
IC802 M5M5256FP
IC855 UPD4013BG
C802 22/16
IC853 TC4S71F
IC852 TC4S69F
D801 MA714
R802 1K
IC851 UPD4013BG
C812 390P
R821 2.2M
R820 4.7K
CN801
5V
C BLK
P1
P2
V REC(L)
VD
BATT(-)
CL2 (R)
CL1 (B)
CL3 (G)
GND
HD
From/To 25 FAW, CN502

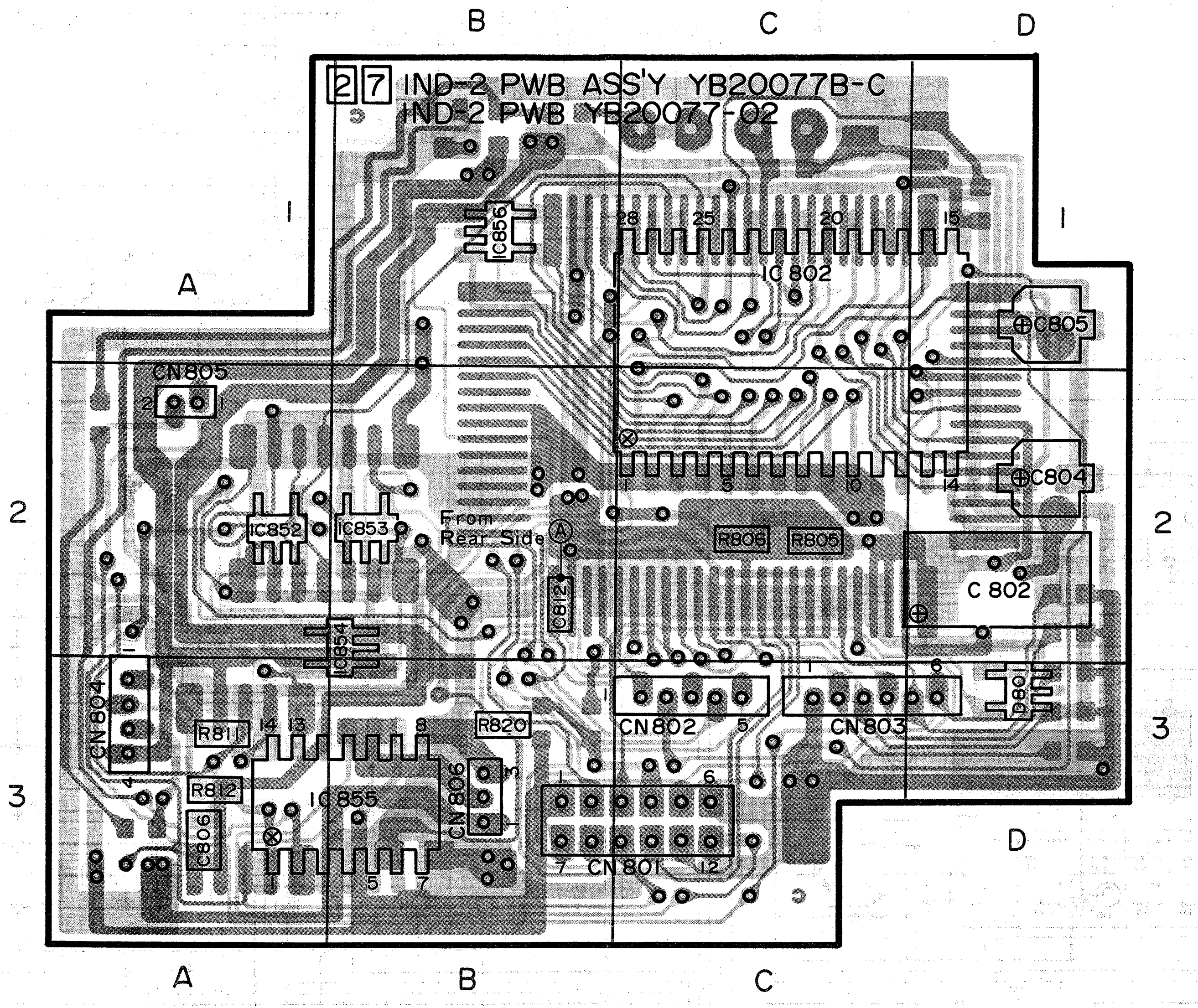
Note:
Waveform are measured with the oscilloscope during TITLE mode (white).

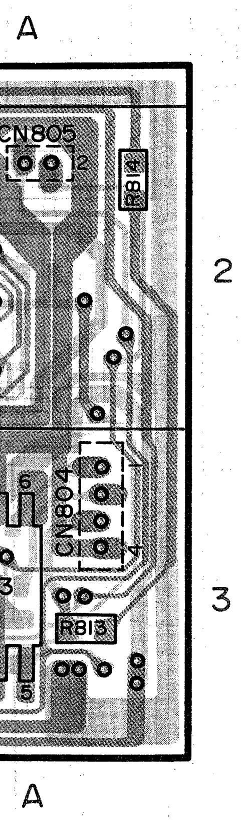
4.27 INDICATOR-2 CIRCUIT BOARD

— Rear —

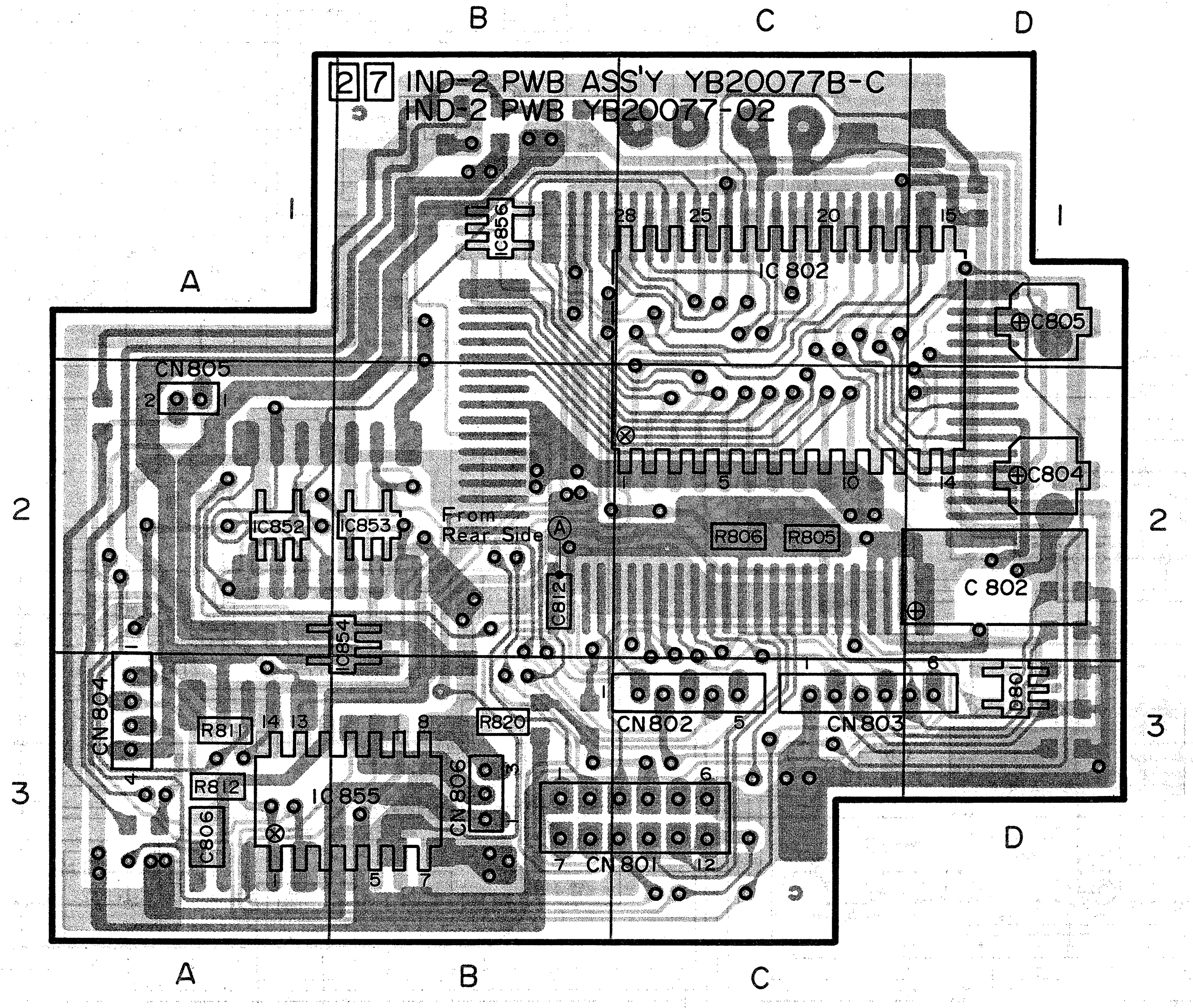

R801
TITLE WIDTH
27 IND-2 PWB ASS'Y YB20077B-C
IND-2 PWB YB20077-02
R801
R803
R804
R816
R815
Q801
E
B
C
C803
IC 801
IC851
IC803
IC804
CN803
CN802
CN801
CN804
CN805
CN806
R802
R821
R813
R814
L801
L802
R829
D802
Ⓐ
D
C
B
A
1
2
3

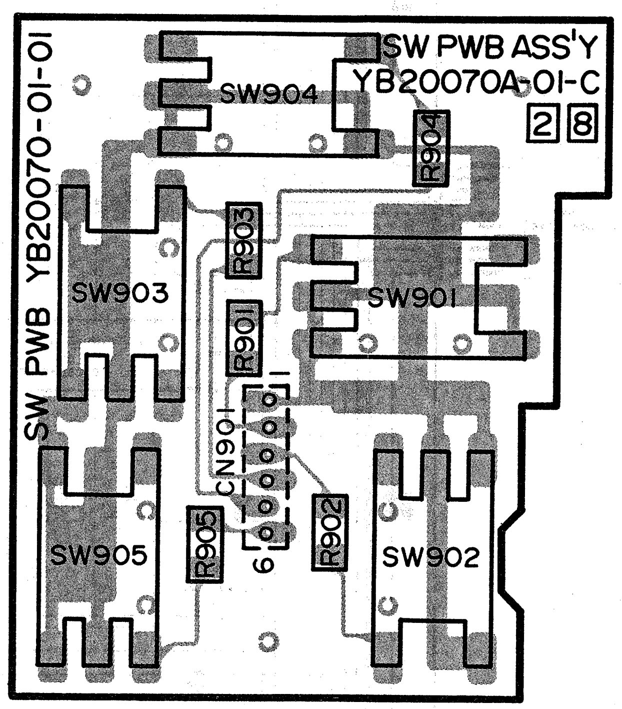
— Front —


27 IND-2 PWB ASS'Y YB20077B-C
IND-2 PWB YB20077-02
IC856
IC 802
C805
C804
C 802
IC852
IC853
IC854
IC855
From Rear Side Ⓐ
C812
R806
R805
R811
R812
R820
C806
D801
CN805
CN804
CN806
CN802
CN803
CN801
A
B
C
D
1
2
3

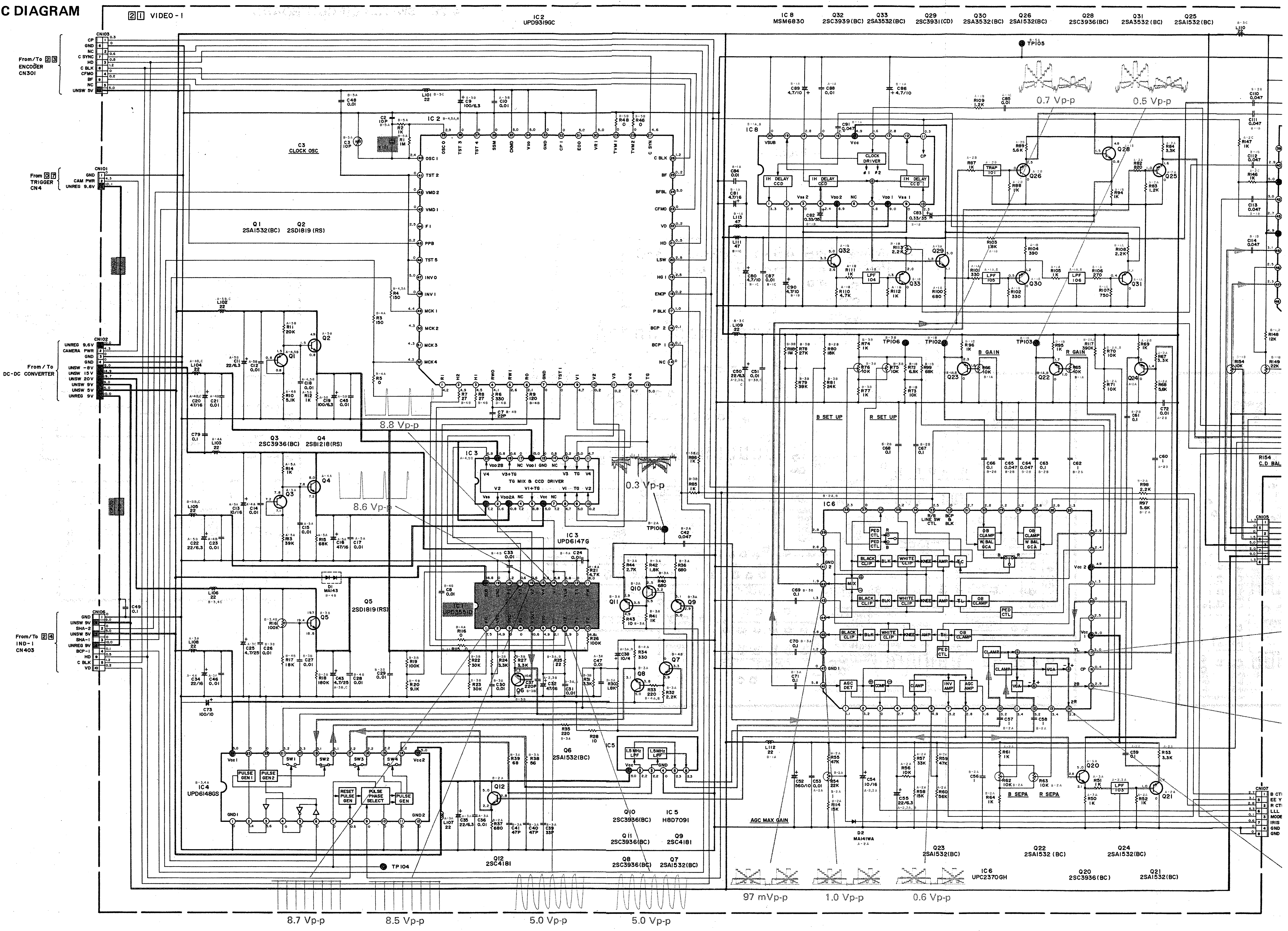

A
CN805
R814
2
CN804
6
3
R813
A

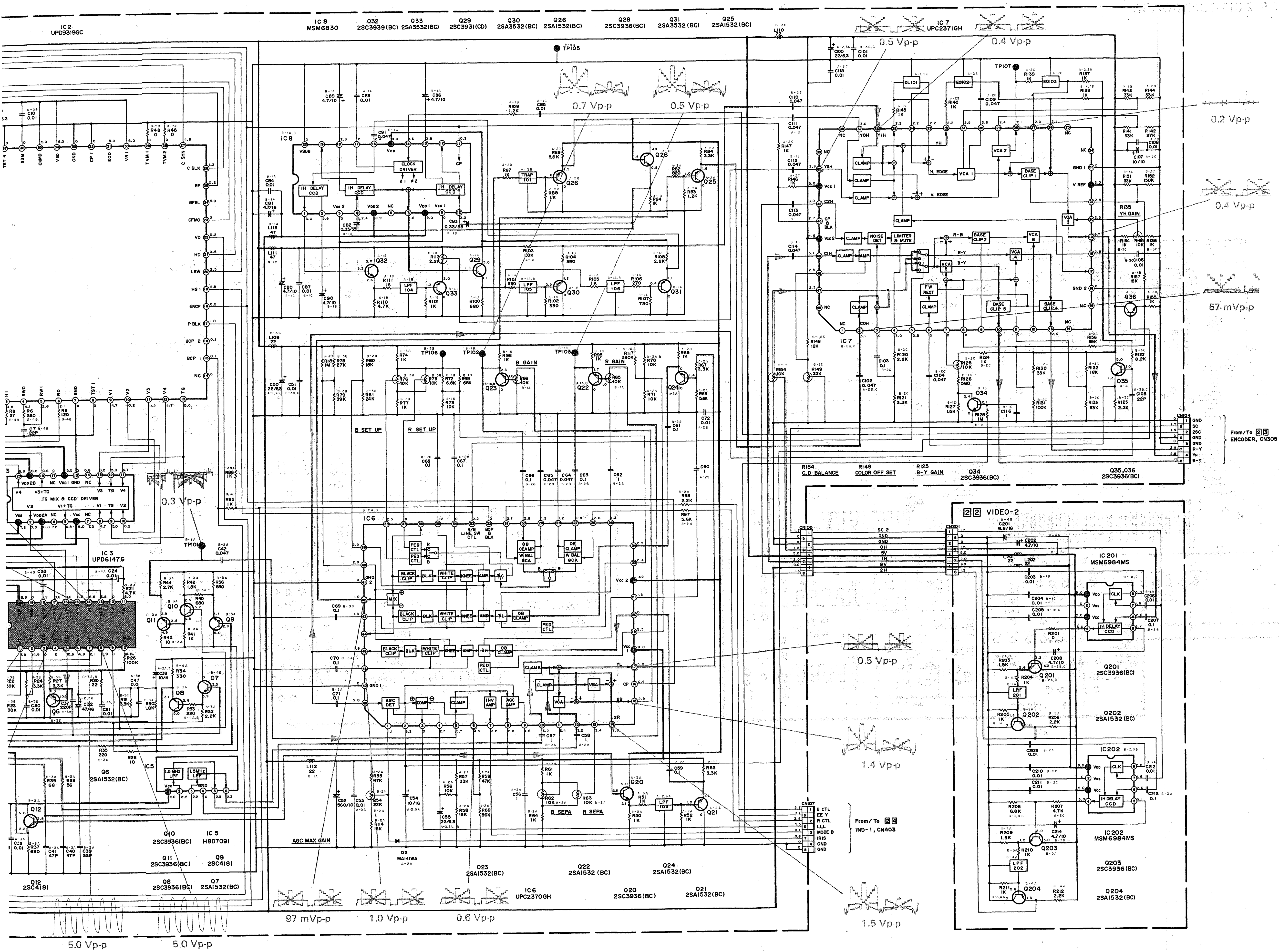
— Front —


B
C
D
27
IND-2 PWB ASS'Y YB20077B-C
IND-2 PWB YB20077-02
1
A
IC856
28
25
20
15
IC 802
C805
CN805
2
5
10
14
C804
IC852
IC853
From
Rear Side
Ⓐ
R806
R805
C 802
C812
IC854
CN804
4
R811
14
13
8
R820
1
CN802
5
1
6
CN803
D801
R812
IC855
C806
CN806
3
1
6
7
CN801
12
5
7
D
A
B
C
2
3


SW PWB ASS'Y
YB20070A-01-C
28
SW PWB YB20070-01-01
SW904
R904
R903
SW903
SW901
R901
CN901
11
6
R905
R902
SW905
SW902

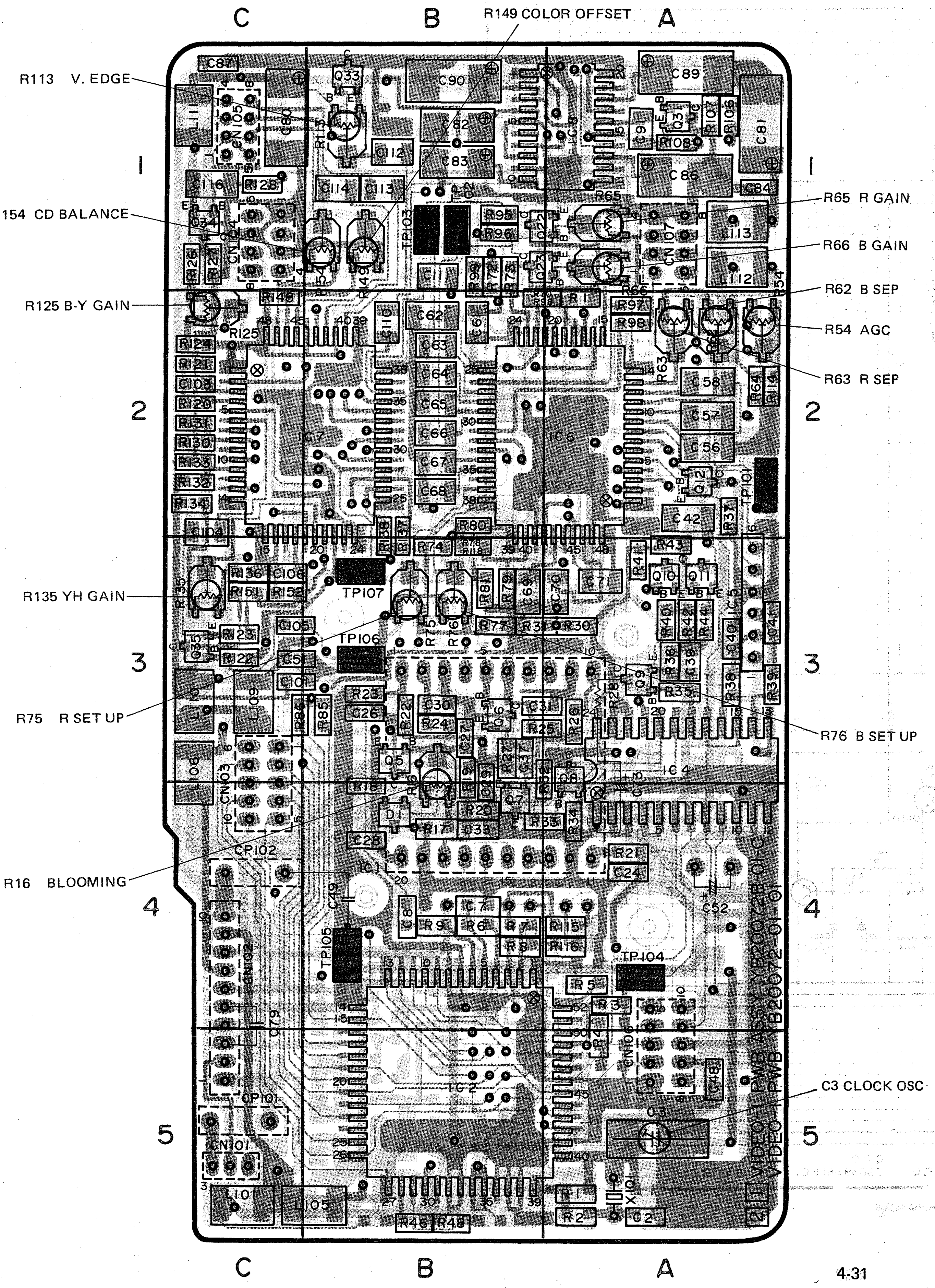
4.29 VIDEO SCHEMATIC DIAGRAM


21 VIDEO - I
From/To 23 ENCODER CN301
CN103
CP
GND
NC
C SYNC
HD
C BLK
CFMO
BF
NC
UNSW 5V
From 07 TRIGGER CN4
CN101
GND
CAM PWR
UNREG 9.6V
From/To DC-DC CONVERTER
CN102
UNREG 9.6V
CAMERA PWR
UNSW -8V
UNSW 15V
UNSW 20V
UNSW 9V
UNSW 5V
UNREG 9V
From/To 24 IND-1 CN403
CN106
SHA-2
SHA-1
BCP-1
VD
IC2 UPD9319GC
C3 CLOCK OSC
Q1 2SA1532(BC)
Q2 2SD1819(RS)
Q3 2SC3936(BC)
Q4 2SB1218(RS)
Q5 2SD1819(RS)
IC3 UPD6147G
TG MIX & CCD DRIVER
IC1 UPD3551D
D1 MA143
IC4 UPD6148GS
PULSE GEN1
PULSE GEN2
RESET PULSE GEN
PULSE /PHASE SELECT
PULSE GEN
Q6 2SA1532(BC)
Q12 2SC4181
Q10 2SC3936(BC)
Q11 2SC3936(BC)
Q8 2SC3936(BC)
IC5 HBD7091
Q9 2SC4181
Q7 2SA1532(BC)
1.5 MHz LPF
1.5MHz LPF
TP101
TP104
TP105
TP106
TP102
TP103
IC8 MSM6830
Q32 2SC3939(BC)
Q33 2SA3532(BC)
Q29 2SC3931(CD)
Q30 2SA3532(BC)
Q26 2SA1532(BC)
Q28 2SC3936(BC)
Q31 2SA3532(BC)
Q25 2SA1532(BC)
1H DELAY CCD
CLOCK DRIVER
TRAP 101
LPF 104
LPF 105
LPF 106
B GAIN
R GAIN
B SET UP
R SET UP
IC6
PED CTL
BLACK CLIP
WHITE CLIP
KNEE
AMP
OB CLAMP
W BAL GCA
MIX
CLAMP
VCA
AGC DET
COMP
INV AMP
AGC AMP
B SEPA
R SEPA
AGC MAX GAIN
D2 MA141WA
Q23 2SA1532(BC)
Q22 2SA1532(BC)
Q24 2SA1532(BC)
Q20 2SC3936(BC)
Q21 2SA1532(BC)
IC6 UPC2370GH
R154 C.D BAL
CN105
CN107
B CTL
EE Y
R CTL
LLL
MODE
IRIS
GND
0.7 Vp-p
0.5 Vp-p
8.8 Vp-p
8.6 Vp-p
0.3 Vp-p
97 mVp-p
1.0 Vp-p
0.6 Vp-p
8.7 Vp-p
8.5 Vp-p
5.0 Vp-p
5.0 Vp-p


IC2 UPD9319GC
IC8 MSM6830
Q32 2SC3939(BC)
Q33 2SA3532(BC)
Q29 2SC3931(CD)
Q30 2SA3532(BC)
Q26 2SA1532(BC)
Q28 2SC3936(BC)
Q31 2SA3532(BC)
Q25 2SA1532(BC)
IC7 UPC2371GH
0.5 Vp-p
0.4 Vp-p
0.7 Vp-p
0.5 Vp-p
0.2 Vp-p
0.4 Vp-p
57 mVp-p
TP105
TP107
TP106
TP102
TP103
TP101
CLOCK DRIVER
1H DELAY CCD
TRAP 101
LPF 104
LPF 105
LPF 106
B GAIN
R GAIN
B SET UP
R SET UP
DL101
EQ102
EQ103
CLAMP
NOISE DET
LIMITER & MUTE
VCA 1
VCA 2
VCA 3
VCA 4
VCA 5
BASE CLIP 1
BASE CLIP 2
BASE CLIP 3
BASE CLIP 4
H. EDGE
V. EDGE
FW RECT
YH GAIN
R154 C.D BALANCE
R149 COLOR OFF SET
R125 B-Y GAIN
Q34 2SC3936(BC)
Q35,036 2SC3936(BC)
CN104
From/To 25 ENCODER, CN305
IC6
R/B LINE SW CTL
RCP B BLK
OB CLAMP
W BAL GCA
BLACK CLIP
WHITE CLIP
KNEE
AMP
PED CTL
MIX
AGC DET
COMP
INV AMP
AGC AMP
VCA
IC3 UPD6147G
TG MIX & CCD DRIVER
0.3 Vp-p
IC5
1.5MHz LPF
1.5MHz LPF
Q6 2SA1532(BC)
Q10 2SC3936(BC)
IC5 H8D7091
Q11 2SC3936(BC)
Q9 2SC4181
Q12 2SC4181
Q8 2SC3936(BC)
Q7 2SA1532(BC)
AGC MAX GAIN
D2 MA141WA
Q23 2SA1532(BC)
IC6 UPC2370GH
Q22 2SA1532 (BC)
Q24 2SA1532(BC)
Q20 2SC3936(BC)
Q21 2SA1532(BC)
B SEPA
R SEPA
LPF 103
97 mVp-p
1.0 Vp-p
0.6 Vp-p
5.0 Vp-p
5.0 Vp-p
0.5 Vp-p
1.4 Vp-p
1.5 Vp-p
CN105
CN107
From/To 24 IND-1, CN403
22 VIDEO-2
CN201
IC201 MSM6984MS
IC202 MSM6984MS
1H DELAY CCD
CLK
LPF 201
LPF 202
Q201 2SC3936(BC)
Q202 2SA1532(BC)
Q203 2SC3936(BC)
Q204 2SA1532(BC)
SC 2
GND
OH
5V
1H
9V
2H
B CTL
EE Y
R CTL
LLL
MODE B
IRIS
GND
GND

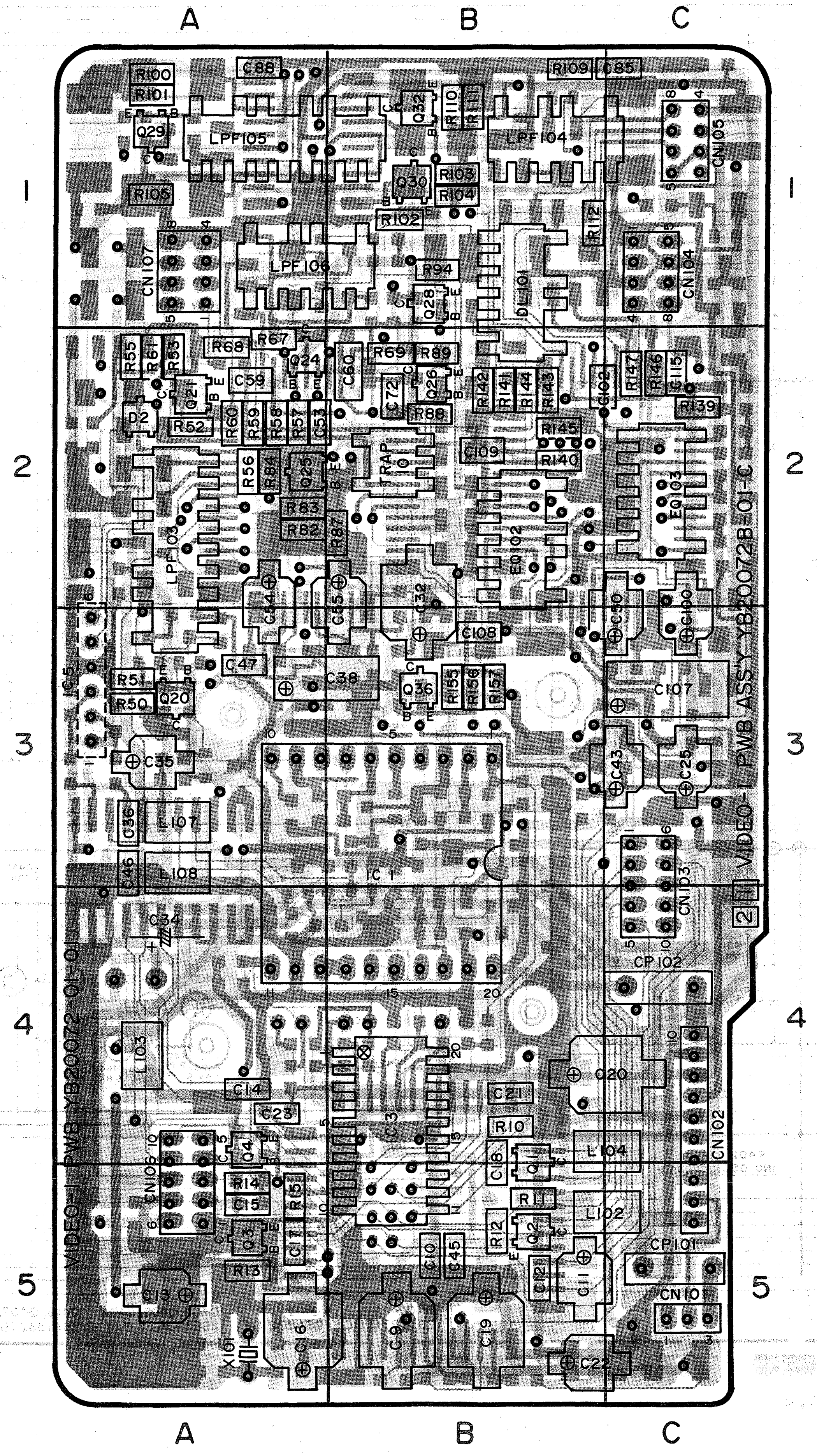
4.30 VIDEO-1 CIRCUIT BOARD

— Rear —

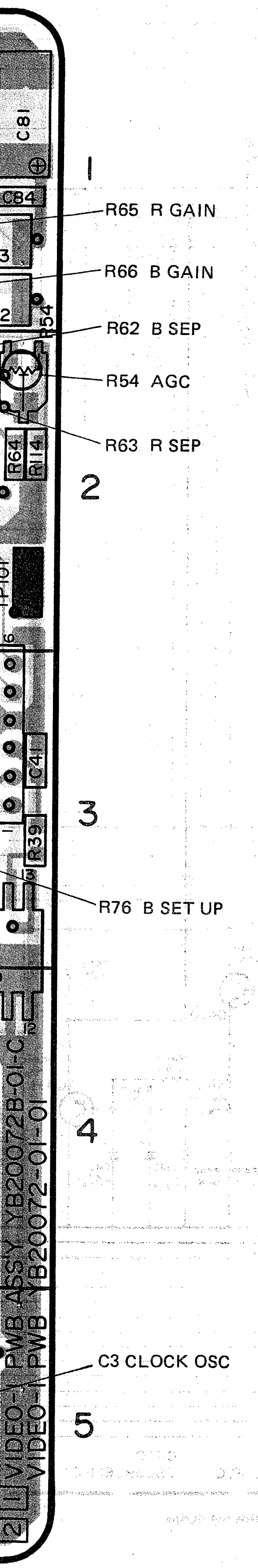


R149 COLOR OFFSET
R113 V. EDGE
R154 CD BALANCE
R125 B-Y GAIN
R135 YH GAIN
R75 R SET UP
R16 BLOOMING
R65 R GAIN
R66 B GAIN
R62 B SEP
R54 AGC
R63 R SEP
R76 B SET UP
C3 CLOCK OSC
C
B
A
1
2
3
4
5
VIDEO-1 PWB ASSY YB20072B-01-C
VIDEO-1 PWB YB20072-01-01

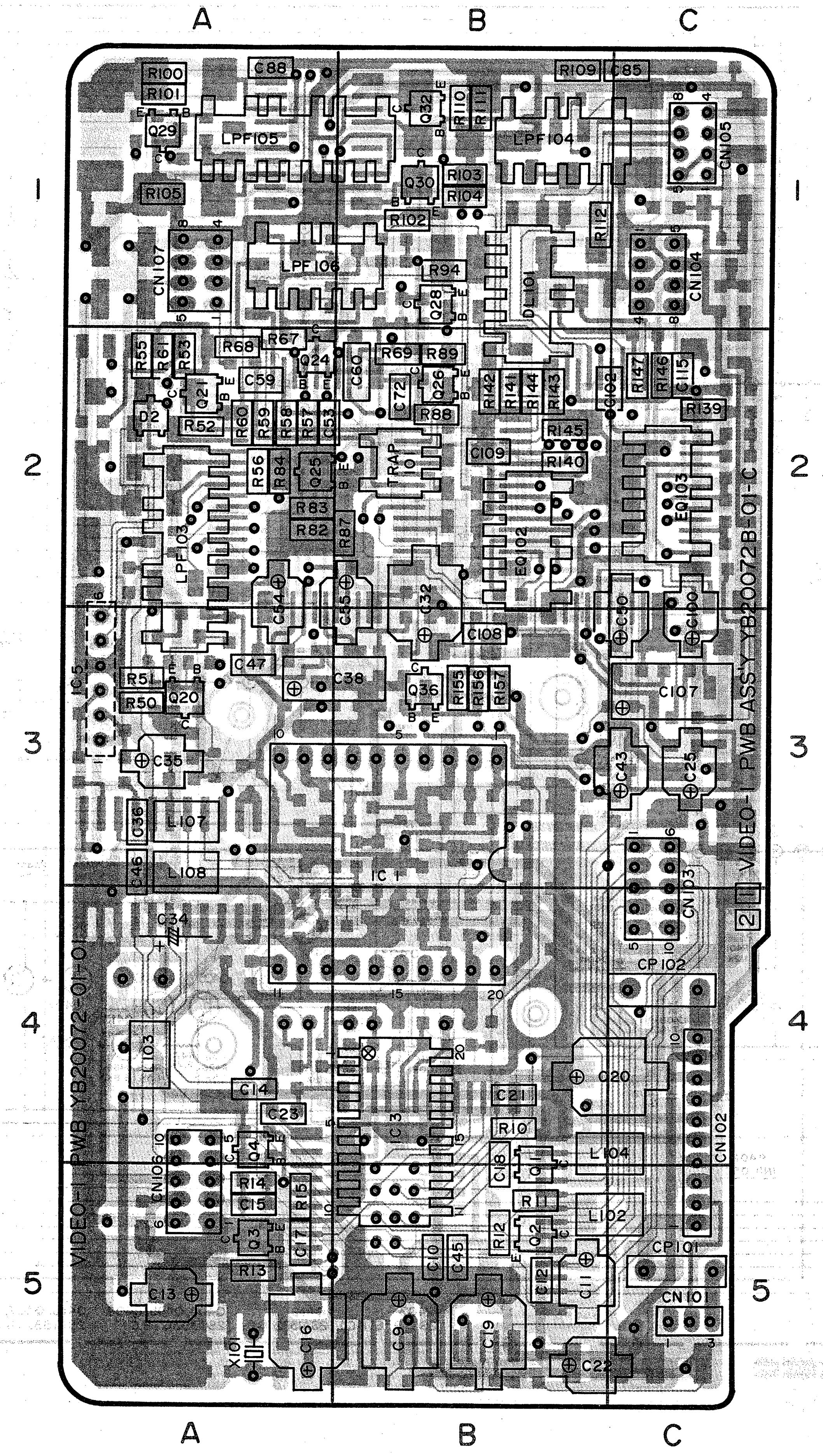
— Front —



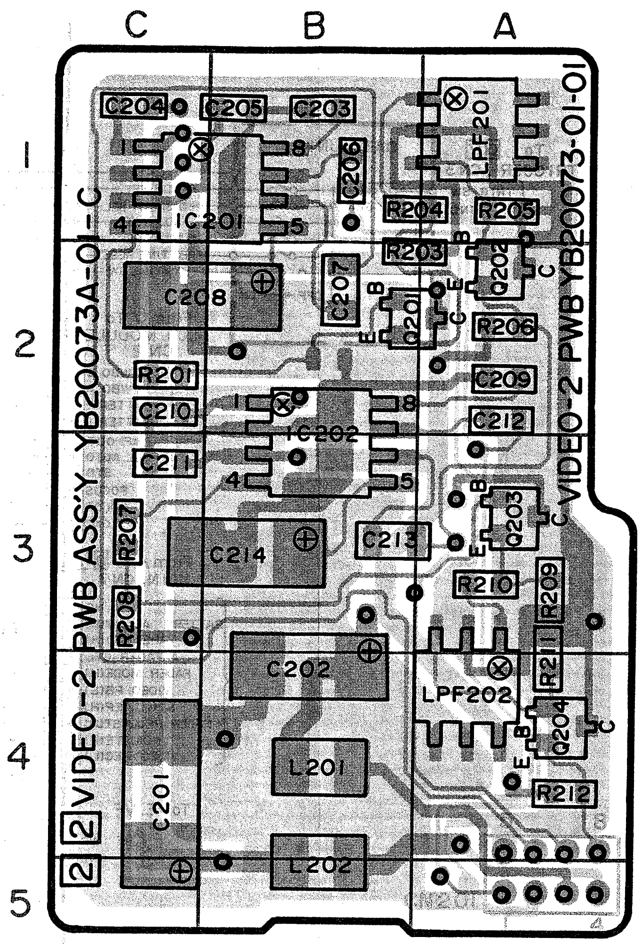
A
B
C
1
2
3
4
5
VIDEO-1 PWB ASSY YB20072B-01-C
VIDEO-1 PWB YB20072-01-01


R65 R GAIN
R66 B GAIN
R62 B SEP
R54 AGC
R63 R SEP
R76 B SET UP
C3 CLOCK OSC
1
2
3
4
5
VIDEO-1 PWB ASS'Y YB20072B-01-C
VIDEO-1 PWB YB20072-01-01

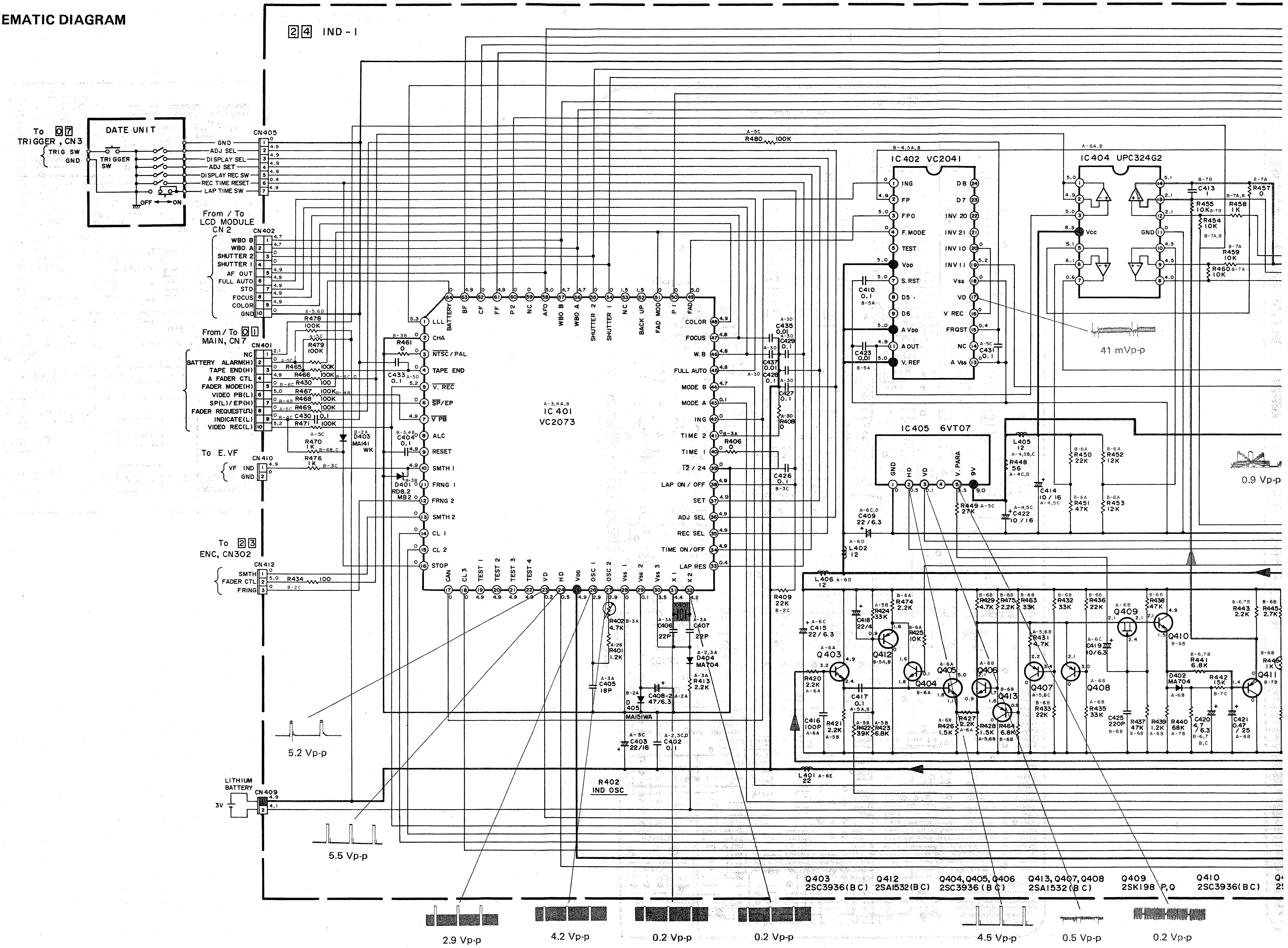
— Front —


A
B
C
1
2
3
4
5
VIDEO-1 PWB ASS'Y YB20072B-01-C
VIDEO-1 PWB YB20072-01-01
IC1
IC3
IC5
DL101
LPF103
LPF104
LPF105
LPF106
EQ102
EQ103
TRAP101
CN101
CN102
CN103
CN104
CN105
CN106
CN107
CP101
CP102
X101
L102
L103
L104
L107
L108

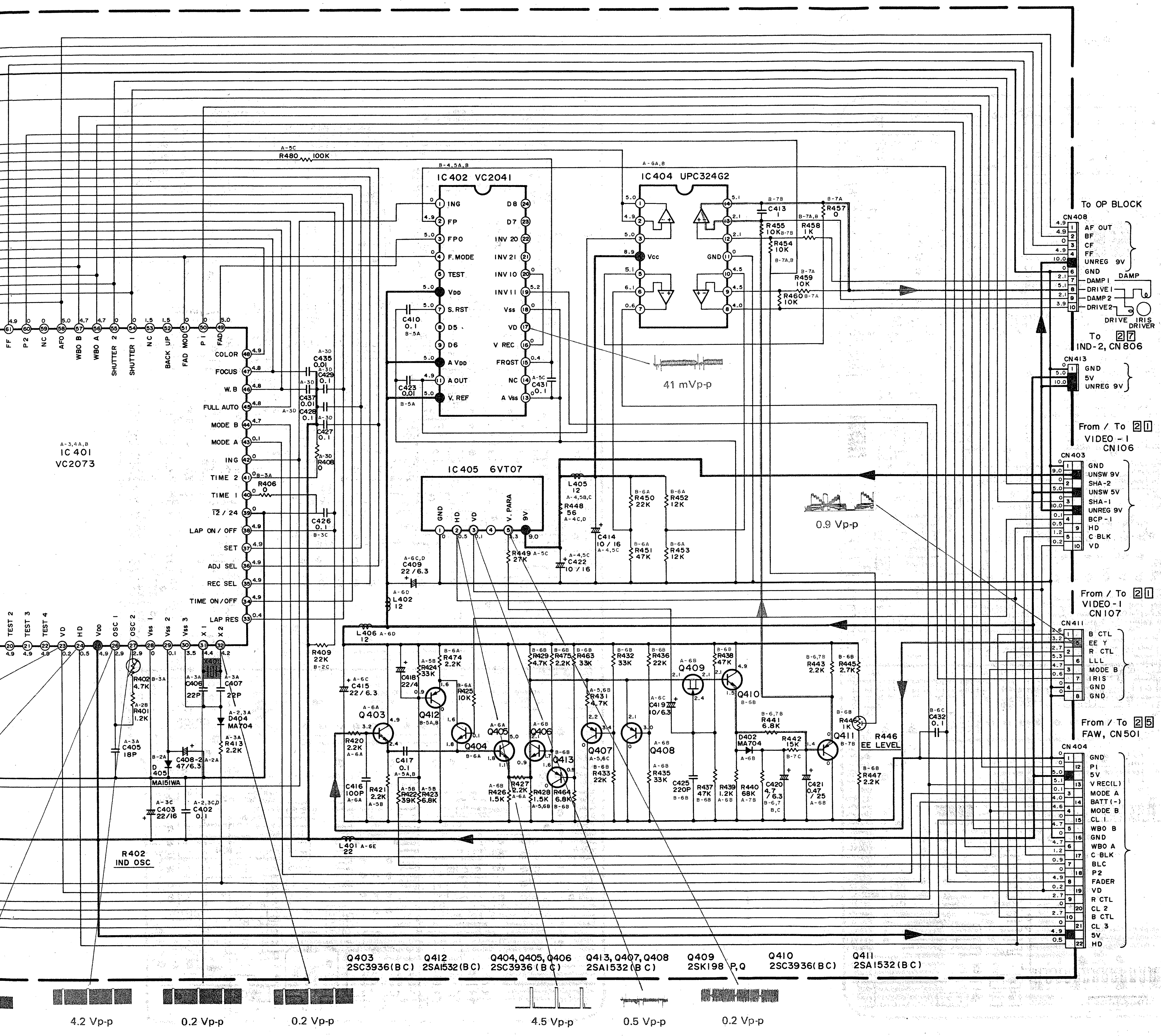
4.31 VIDEO-2 CIRCUIT BOARD


C
B
A
1
2
3
4
5
VIDEO-2 PWB ASS'Y YB20073A-01-C
VIDEO-2 PWB YB20073-01-01
IC201
IC202
LPF201
LPF202
L201
L202
Q201
Q202
Q203
Q204
C201
C202
C208
C214

4.32 INDICATOR-1 SCHEMATIC DIAGRAM



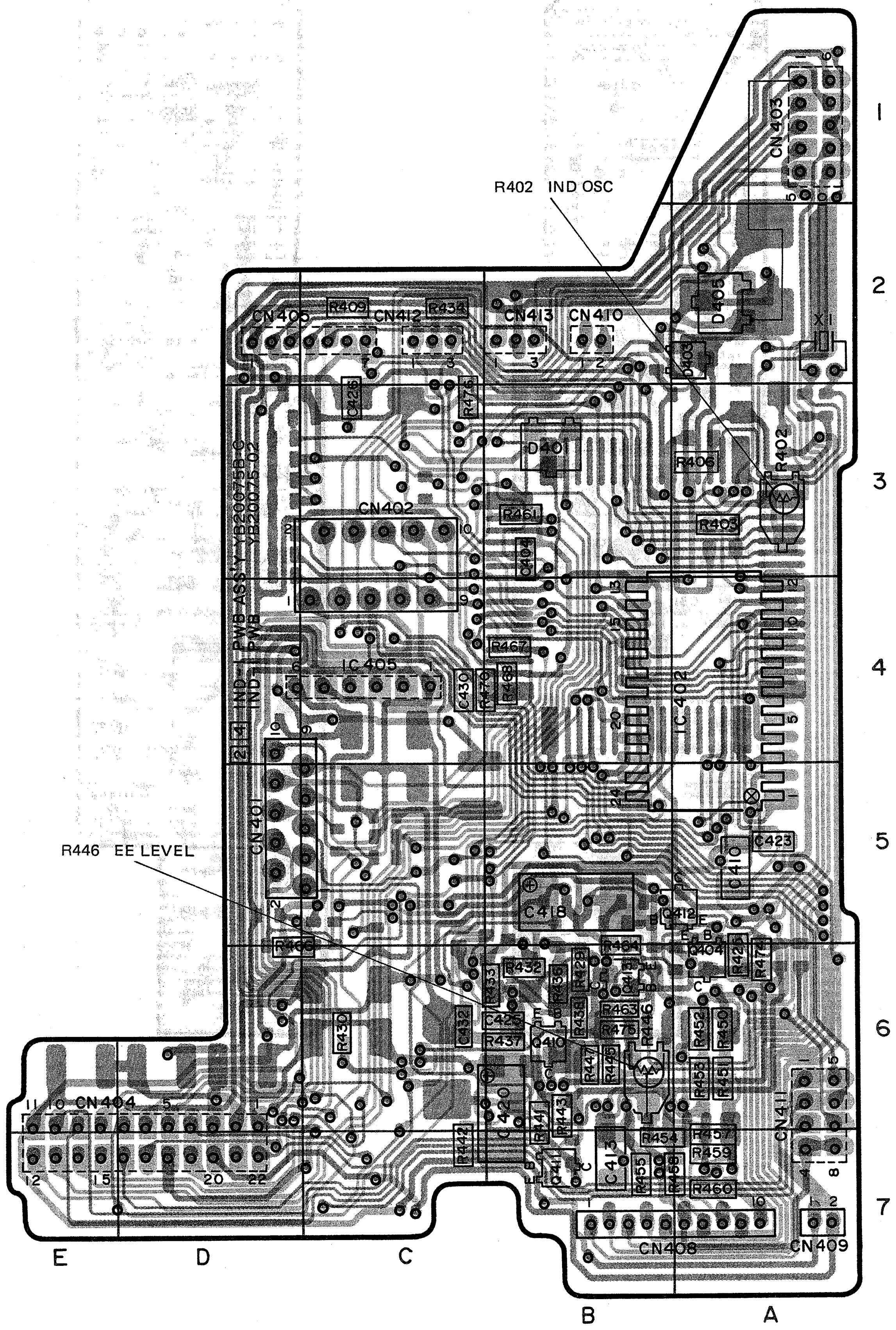
24 IND-1
To 07 TRIGGER, CN3
TRIG SW
GND
DATE UNIT
TRIGGER SW
OFF ON
CN405
GND
ADJ SEL
DISPLAY SEL
ADJ SET
DISPLAY REC SW
REC TIME RESET
LAP TIME SW
From / To LCD MODULE CN2
CN402
WBO B
WBO A
SHUTTER 2
SHUTTER 1
AF OUT
FULL AUTO
STD
FOCUS
COLOR
GND
From / To 01 MAIN, CN7
CN401
NC
BATTERY ALARM(H)
TAPE END(H)
A FADER CTL
FADER MODE(H)
VIDEO PB(L)
SP(L)/EP(H)
FADER REQUEST(L)
INDICATE(L)
VIDEO REC(L)
To E.VF
CN410
VF IND
GND
To 23 ENC, CN302
CN412
SMTH
FADER CTL
FRING
LITHIUM BATTERY
CN409
3V
IC401 VC2073
LLL
CHA
NTSC/PAL
TAPE END
V. REC
SP/EP
V PB
ALC
RESET
SMTH 1
FRNG 1
FRNG 2
SMTH 2
CL 1
CL 2
STOP
BATTERY
BF
CF
FF
P2
NC
AFO
WBO B
WBO A
SHUTTER 2
SHUTTER 1
NC
BACK UP
FAD MOD
P 1
FAD
COLOR
FOCUS
W.B
FULL AUTO
MODE B
MODE A
ING
TIME 2
TIME 1
12 / 24
LAP ON / OFF
SET
ADJ SEL
REC SEL
TIME ON/OFF
LAP RES
CAN
CL3
TEST 1
TEST 2
TEST 3
TEST 4
VD
HD
VDD
OSC 1
OSC 2
Vss 1
Vss 2
Vss 3
X 1
X 2
R402 IND OSC
X401
D405 MA151WA
D404 MA704
D403 MA141WK
D401 RD8.2 MB2
IC402 VC2041
ING
FP
FPO
F.MODE
TEST
VDD
S.RST
D5
D6
A VDD
A OUT
V. REF
D8
D7
INV 20
INV 21
INV 10
INV 11
Vss
VD
V REC
FROST
NC
A Vss
IC404 UPC324G2
Vcc
GND
IC405 6VT07
GND
HD
VD
V. PARA
9V
L401
L402
L405
L406
Q403
Q404
Q405
Q406
Q407
Q408
Q409
Q410
Q411
Q412
Q413
D402 MA704
Q403 2SC3936(BC)
Q412 2SA1532(BC)
Q404, Q405, Q406 2SC3936 (BC)
Q413, Q407, Q408 2SA1532 (BC)
Q409 2SK198 P,Q
Q410 2SC3936(BC)
41 mVp-p
0.9 Vp-p
5.2 Vp-p
5.5 Vp-p
2.9 Vp-p
4.2 Vp-p
0.2 Vp-p
0.2 Vp-p
4.5 Vp-p
0.5 Vp-p
0.2 Vp-p


IC401 VC2073
IC402 VC2041
IC404 UPC324G2
IC405 6VT07
To OP BLOCK
CN408
AF OUT
BF
CF
FF
UNREG 9V
GND
DAMP1
DRIVE1
DAMP2
DRIVE2
DAMP
DRIVE IRIS DRIVER
To 27 IND-2, CN806
CN413
GND
5V
UNREG 9V
From / To 21 VIDEO-1 CN106
CN403
GND
UNSW 9V
SHA-2
UNSW 5V
SHA-1
UNREG 9V
BCP-1
HD
C BLK
VD
From / To 21 VIDEO-1 CN107
CN411
B CTL
EE Y
R CTL
LLL
MODE B
IRIS
GND
GND
From / To 25 FAW, CN501
CN404
GND
P1
5V
V REC(L)
MODE A
BATT(-)
MODE B
CL 1
WBO B
GND
WBO A
C BLK
BLC
P2
FADER
VD
R CTL
CL 2
B CTL
CL 3
5V
HD
41 mVp-p
0.9 Vp-p
R446 EE LEVEL
R402 IND OSC
Q403 2SC3936(BC)
Q412 2SA1532(BC)
Q404, Q405, Q406 2SC3936(BC)
Q413, Q407, Q408 2SA1532(BC)
Q409 2SK198 P,Q
Q410 2SC3936(BC)
Q411 2SA1532(BC)
4.2 Vp-p
0.2 Vp-p
0.2 Vp-p
4.5 Vp-p
0.5 Vp-p
0.2 Vp-p

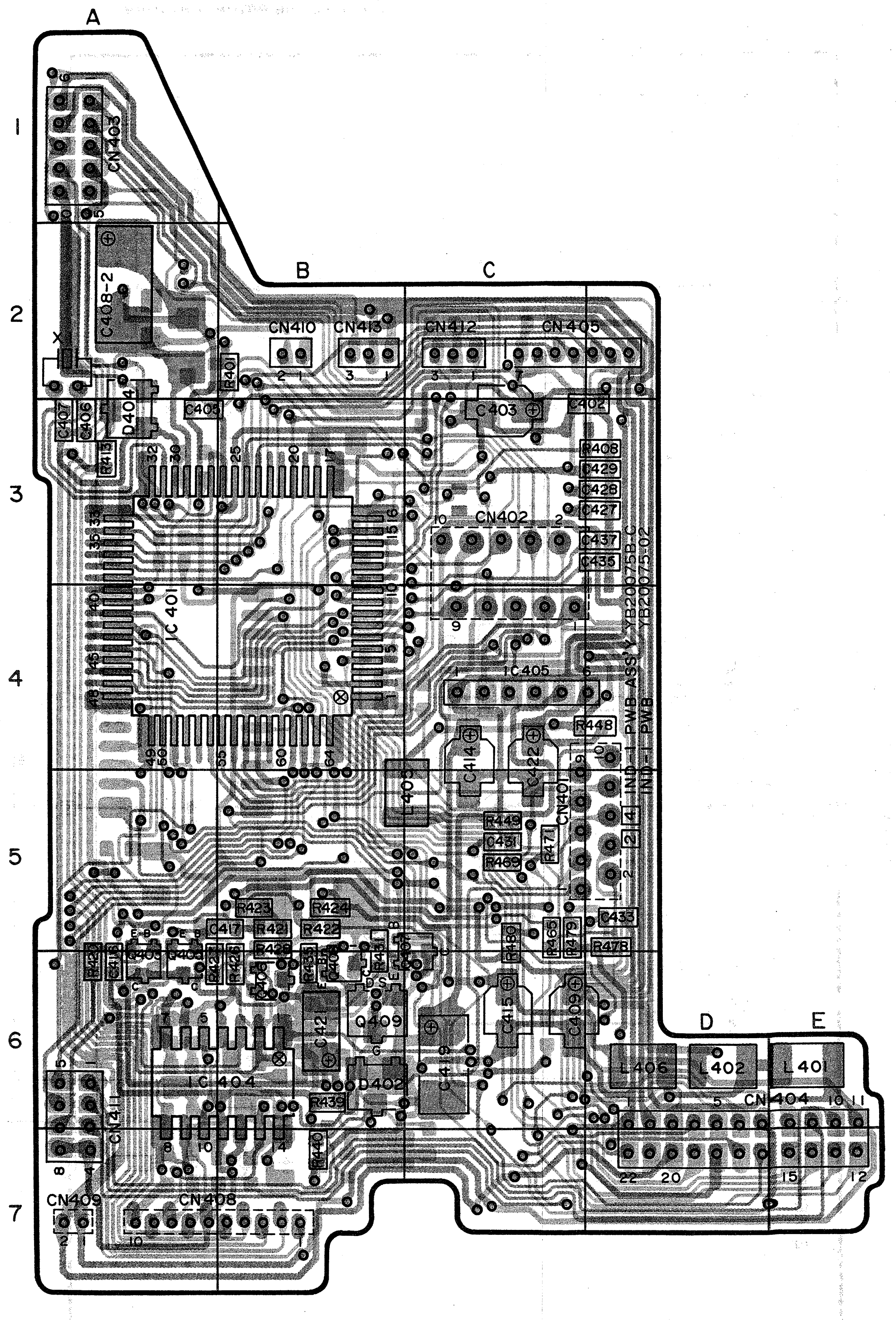
4-32

4.33 INDICATOR-1 CIRCUIT BOARD

– Rear –

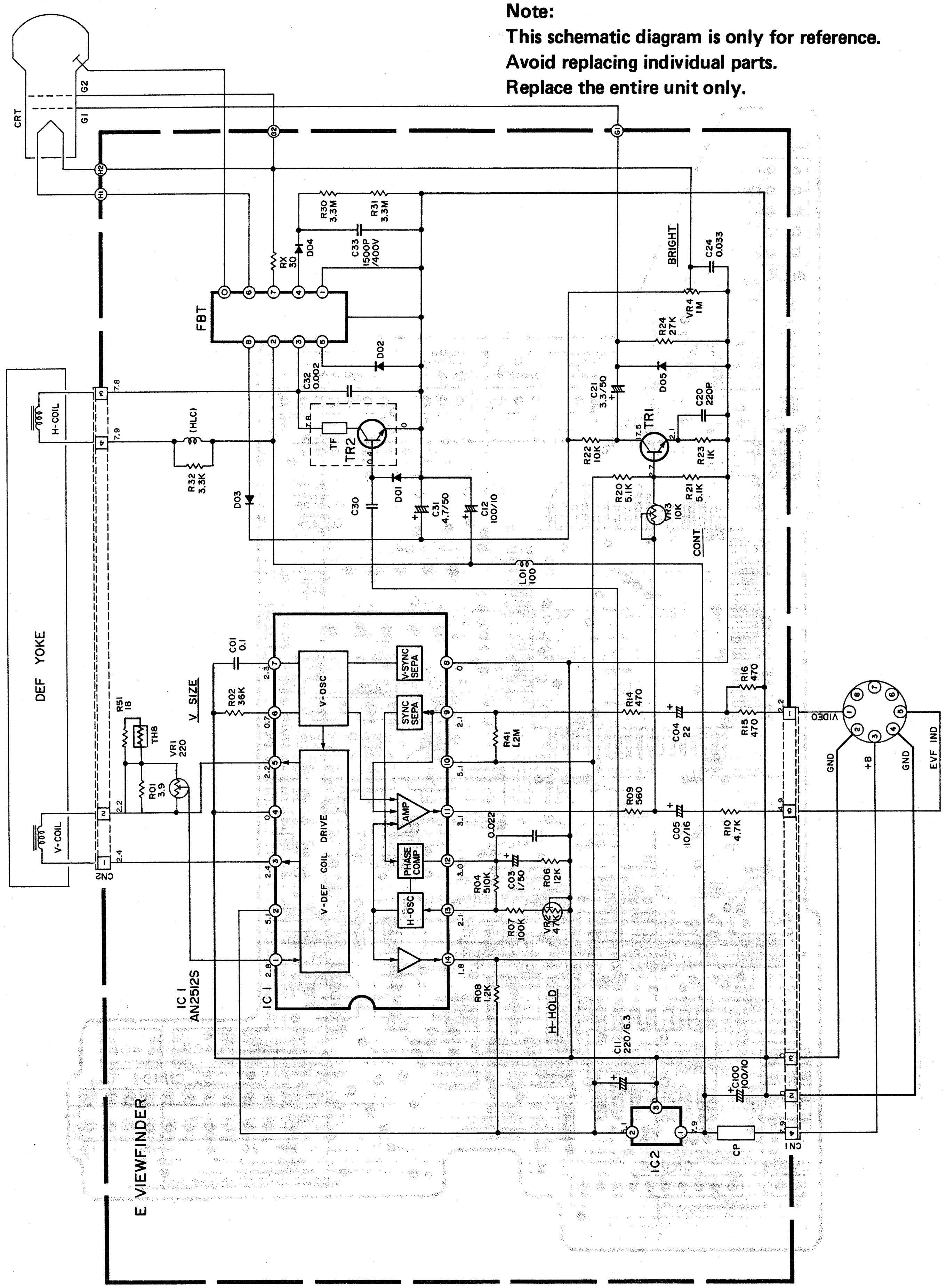

R402 IND OSC
R446 EE LEVEL
CN403
CN405
CN412
CN413
CN410
CN402
CN401
CN404
CN411
CN408
CN409
IC402
IC405
D401
D405
X1
1
2
3
4
5
6
7
E
D
C
B
A

– Front –

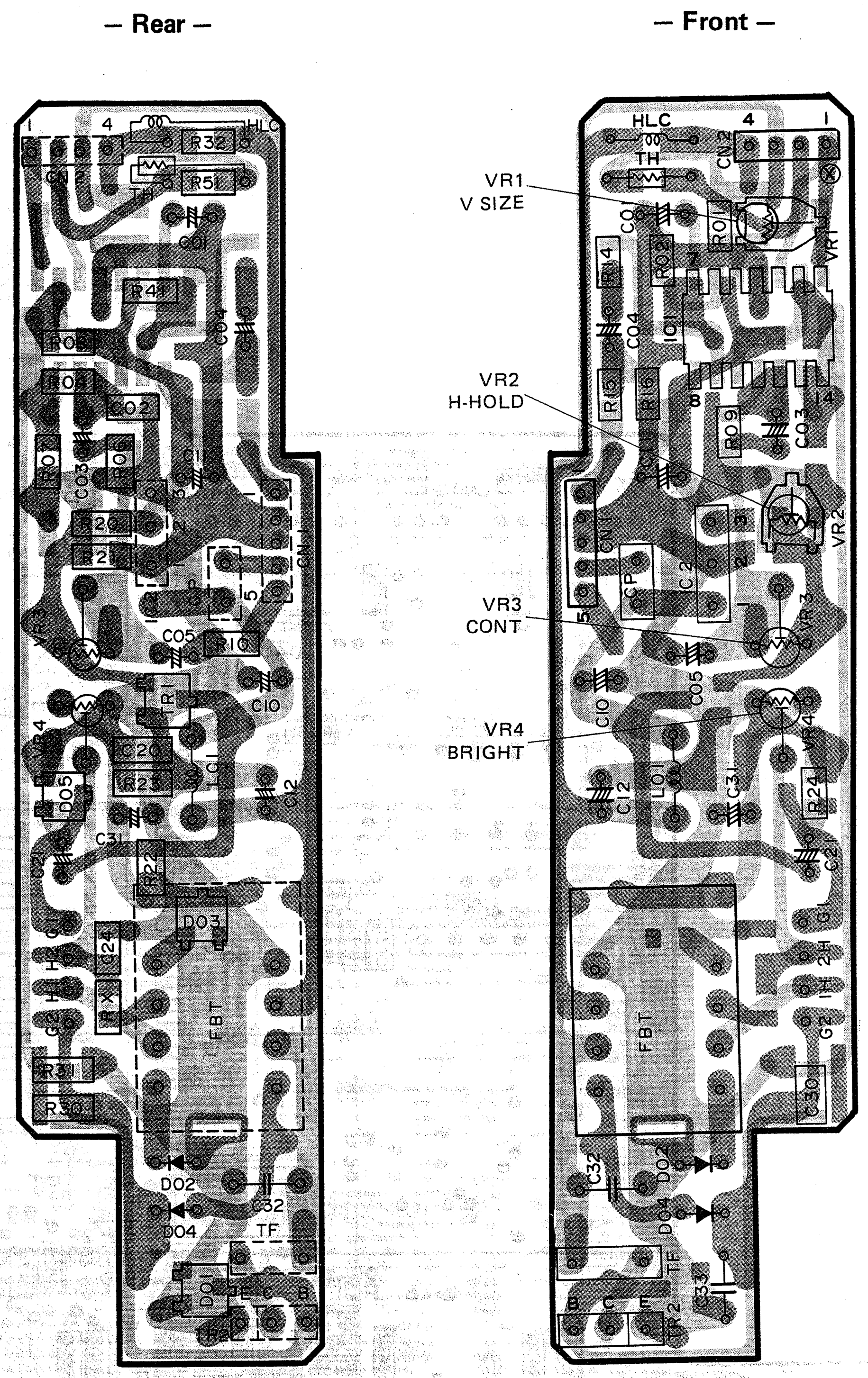

A
B
C
D
E
1
2
3
4
5
6
7
CN403
C408-2
X1
CN410
CN413
CN412
CN405
CN402
IC401
IC405
IC404
CN401
CN411
CN409
CN408
CN404
L406
L402
L401
Q409
D402
D404

4.34 ELECTRONIC VIEWFINDER SCHEMATIC DIAGRAM

Note:
This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


CRT
G2
G1
FBT
R30 3.3M
R31 3.3M
RX 30
D04
C33 1500P/400V
BRIGHT
C24 0.033
VR4 1M
R24 27K
D02
C32 0.002
D05
C21 3.3/50
C20 220P
TR1
TR2
TF
(HLC)
R32 3.3K
D03
D01
C30
C31 4.7/50
C12 100/10
R22 10K
R20 5.1K
VR3 10K
R21 5.1K
R23 1K
CONT
L01 100
H-COIL
V-COIL
DEF YOKE
C01 0.1
V SIZE
R02 36K
R51 18
TH8
VR1 220
R01 3.9
V-OSC
V-SYNC SEPA
SYNC SEPA
V-DEF COIL DRIVE
AMP
PHASE COMP
H-OSC
R41 1.2M
R14 470
R16 470
R15 470
C04 22
R09 560
C05 10/16
R10 4.7K
0.022
R04 510K
C03 1/50
R06 12K
R07 100K
VR2 4.7K
R08 1.2K
H-HOLD
IC1 AN2512S
C11 220/6.3
C100 100/10
IC2
CP
CN2
CN1
VIDEO
GND
+B
EVF IND
E VIEWFINDER

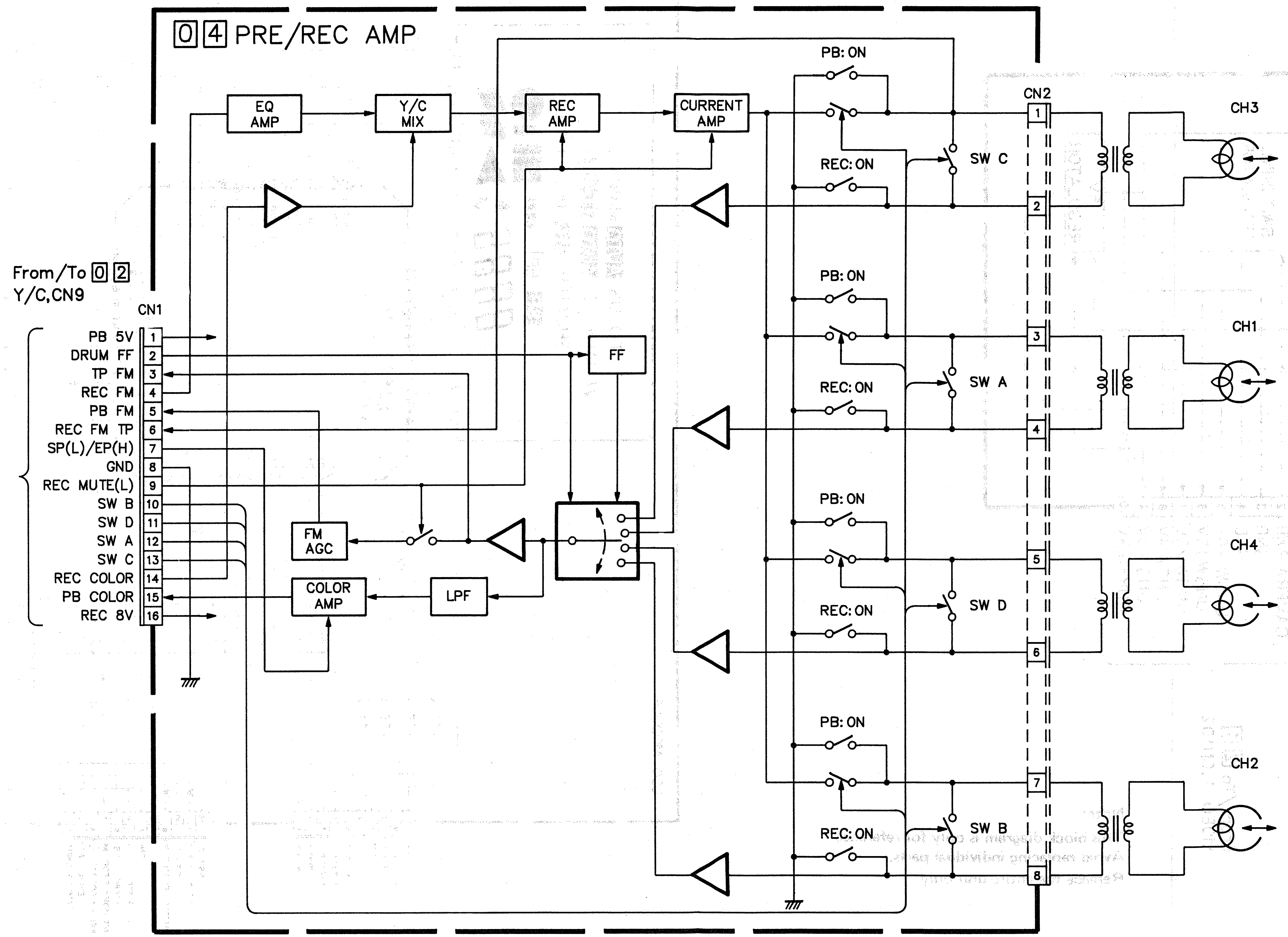
4.35 ELECTRONIC VIEWFINDER CIRCUIT BOARD


– Rear –

– Front –

VR1
V SIZE
VR2
H-HOLD
VR3
CONT
VR4
BRIGHT
HLC
CN2
CN1
FBT
TH
TF
IC1
R32
R51
R41
C01
C02
C03
C04
C05
C10
C11
C12
C20
C21
C30
C31
C32
C33
D01
D02
D03
D04
D05
TR1
TR2
CP
G1
G2
H1
H2
B
C
E

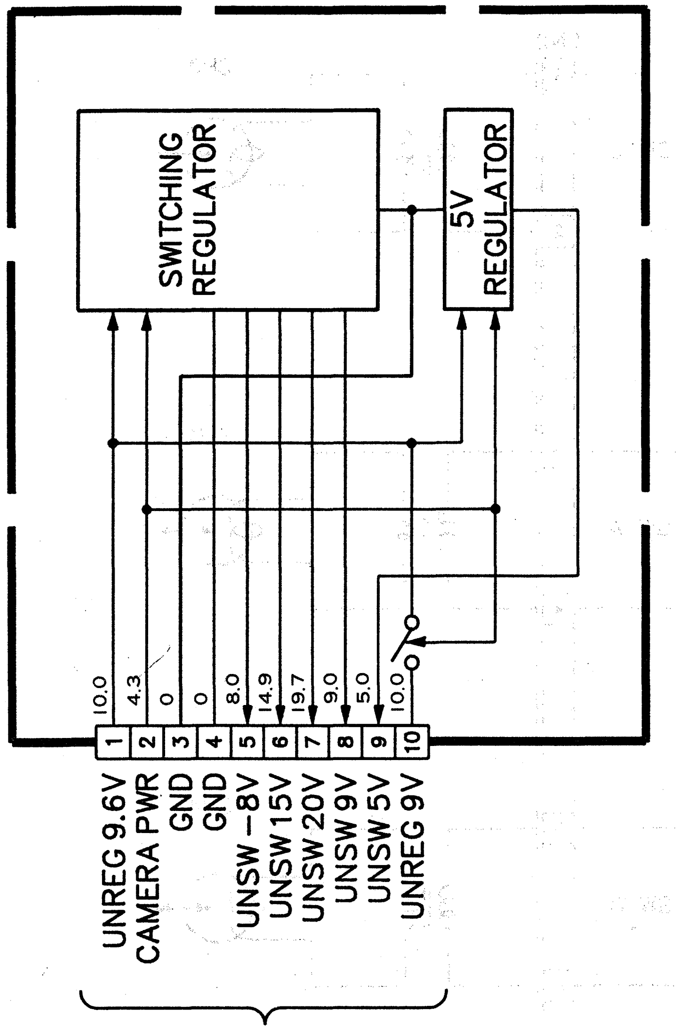
4.36 PRE/REC AMP BLOCK DIAGRAM



0 4 PRE/REC AMP
EQ AMP
Y/C MIX
REC AMP
CURRENT AMP
PB: ON
REC: ON
SW C
SW A
SW D
SW B
CN2
1
2
3
4
5
6
7
8
CH3
CH1
CH4
CH2
From/To 0 2 Y/C,CN9
CN1
PB 5V 1
DRUM FF 2
TP FM 3
REC FM 4
PB FM 5
REC FM TP 6
SP(L)/EP(H) 7
GND 8
REC MUTE(L) 9
SW B 10
SW D 11
SW A 12
SW C 13
REC COLOR 14
PB COLOR 15
REC 8V 16
FF
FM AGC
COLOR AMP
LPF

Note:
This block diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

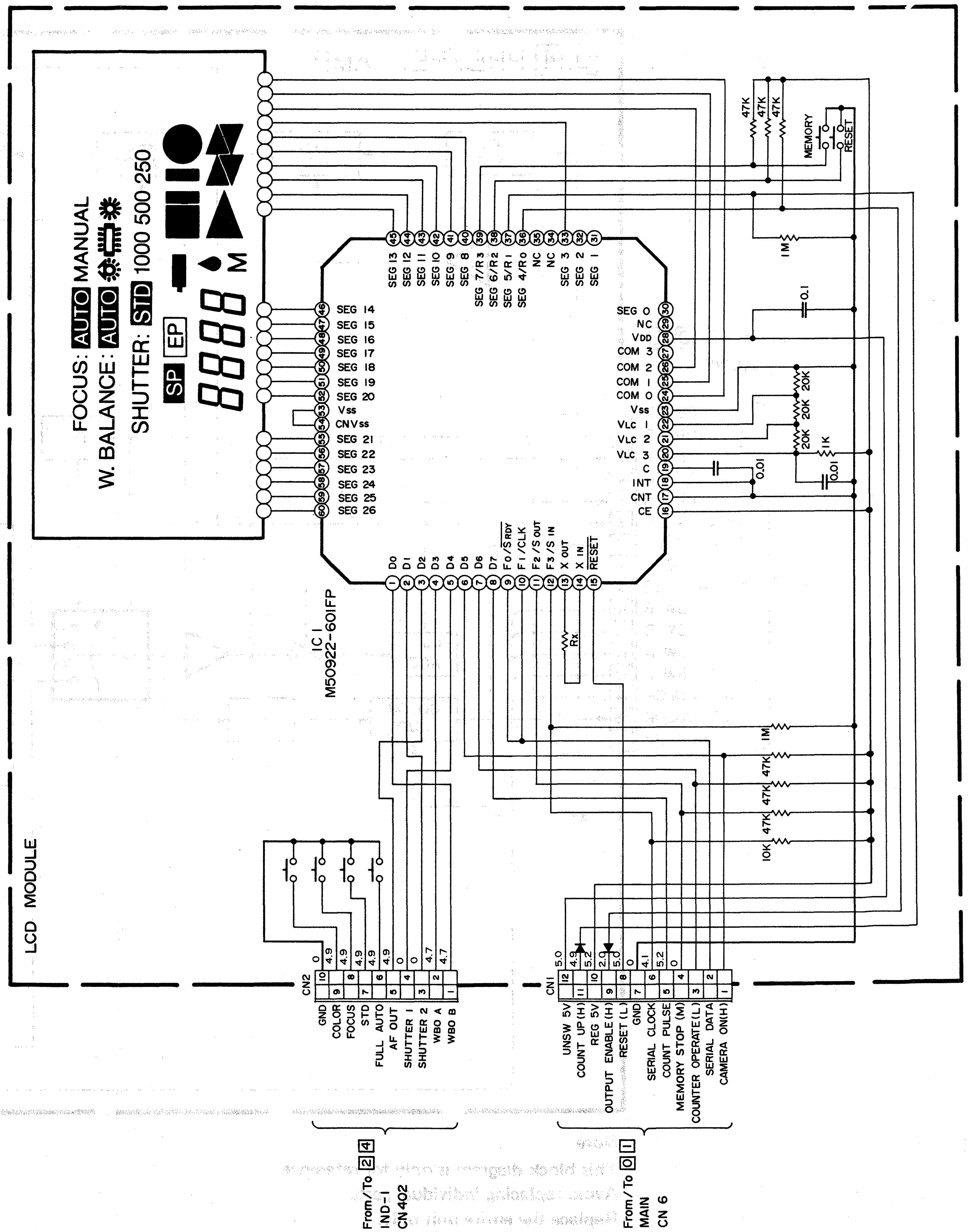
4.37 DC-DC CONVERTER BLOCK DIAGRAM


SWITCHING REGULATOR
5V REGULATOR
10.0
4.3
0
0
8.0
14.9
19.7
9.0
5.0
10.0
1
2
3
4
5
6
7
8
9
10
UNREG 9.6V
CAMERA PWR
GND
GND
UNSW −8V
UNSW15V
UNSW 20V
UNSW 9V
UNSW 5V
UNREG 9V
From/To 2 1
VIDEO-1,CN102

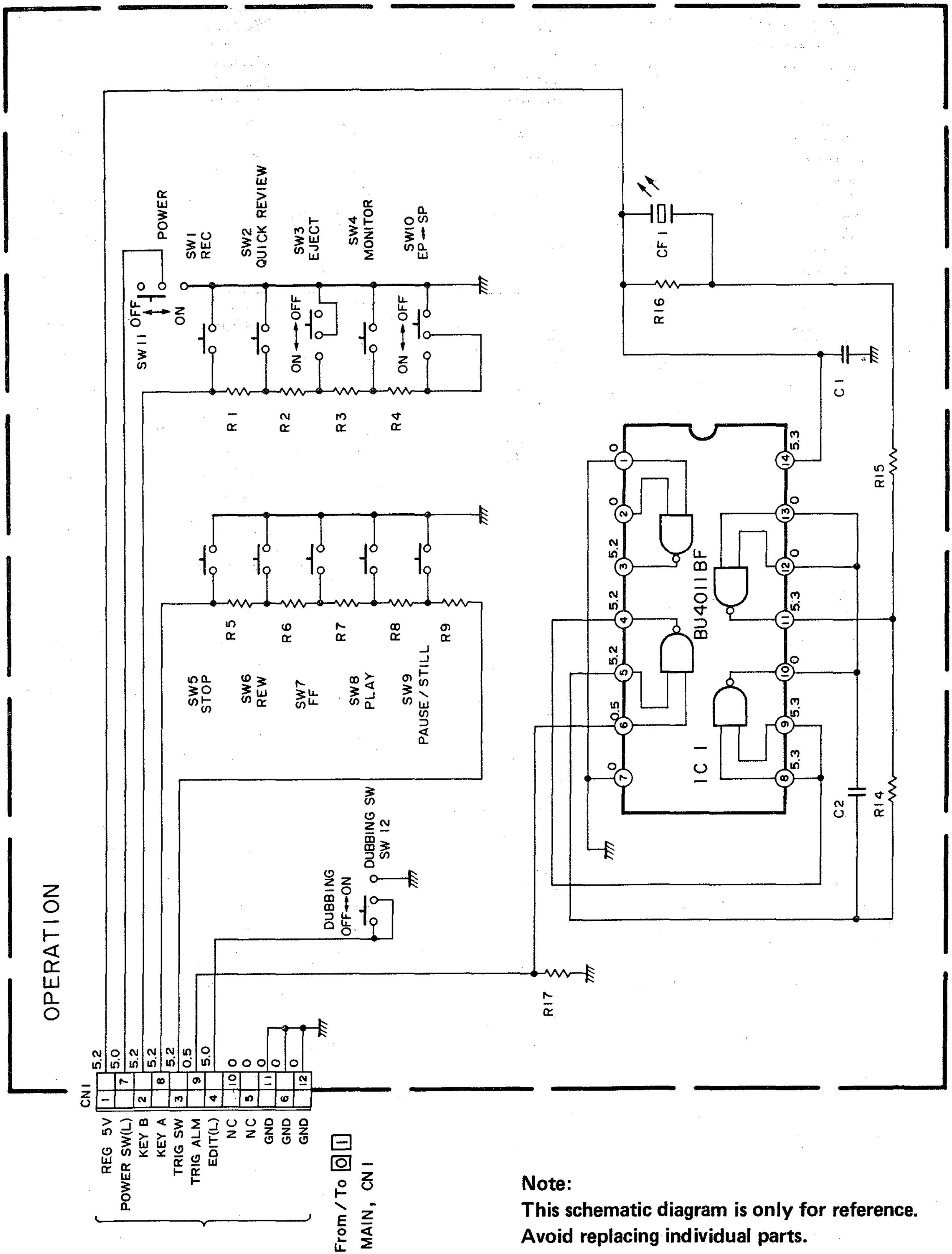
Note:
This block diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

4.38 LCD MODULE SCHEMATIC DIAGRAM

Note:
This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


FOCUS: AUTO MANUAL
W. BALANCE: AUTO
SHUTTER: STD 1000 500 250
SP EP
8888
M
LCD MODULE
IC 1
M50922-601FP
SEG 13
SEG 12
SEG 11
SEG 10
SEG 9
SEG 8
SEG 7/R3
SEG 6/R2
SEG 5/R1
SEG 4/R0
NC
NC
SEG 3
SEG 2
SEG 1
SEG 14
SEG 15
SEG 16
SEG 17
SEG 18
SEG 19
SEG 20
Vss
CNVss
SEG 21
SEG 22
SEG 23
SEG 24
SEG 25
SEG 26
SEG 0
NC
VDD
COM 3
COM 2
COM 1
COM 0
Vss
VLC 1
VLC 2
VLC 3
C
INT
CNT
CE
D0
D1
D2
D3
D4
D5
D6
D7
F0/SRDY
F1/CLK
F2/SOUT
F3/SIN
X OUT
X IN
RESET
Rx
47K
47K
47K
MEMORY
RESET
1M
0.1
20K
20K
20K
1K
0.01
0.01
1M
47K
47K
47K
10K
CN2
GND
COLOR
FOCUS
STD
FULL AUTO
AF OUT
SHUTTER 1
SHUTTER 2
WBO A
WBO B
CN1
UNSW 5V
COUNT UP (H)
REG 5V
OUTPUT ENABLE (H)
RESET (L)
GND
SERIAL CLOCK
COUNT PULSE
MEMORY STOP (M)
COUNTER OPERATE (L)
SERIAL DATA
CAMERA ON (H)
From/To 2 4
IND-1
CN402
From/To 0 1
MAIN
CN 6

4.39 OPERATION SCHEMATIC DIAGRAM



OPERATION
POWER
SW11 OFF ON
SW1 REC
SW2 QUICK REVIEW
SW3 EJECT
ON OFF
SW4 MONITOR
SW10 EP SP
ON OFF
R1
R2
R3
R4
R5
R6
R7
R8
R9
SW5 STOP
SW6 REW
SW7 FF
SW8 PLAY
SW9 PAUSE / STILL
DUBBING OFF ON
DUBBING SW SW 12
R17
CF1
R16
C1
R15
R14
C2
BU4011BF
IC1
1
2
3
4
5
6
7
8
9
10
11
12
13
14
0
0
5.2
5.2
5.2
0.5
0
5.3
0
0
5.3
0
5.3
5.3
CN1
5.2
5.0
5.2
5.2
5.2
0.5
5.0
0
0
0
0
0
REG 5V
POWER SW(L)
KEY B
KEY A
TRIG SW
TRIG ALM
EDIT(L)
NC
NC
GND
GND
GND
From / To 0 1
MAIN, CN1

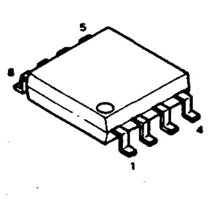
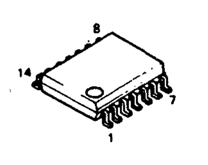
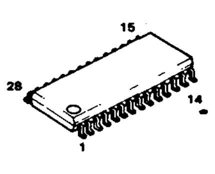
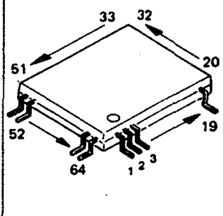
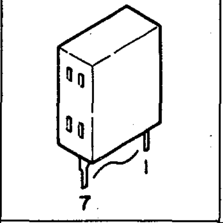
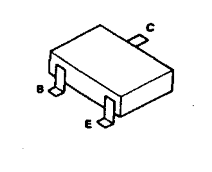
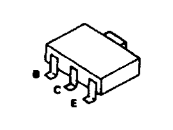
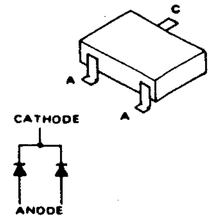
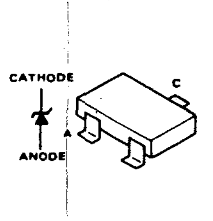
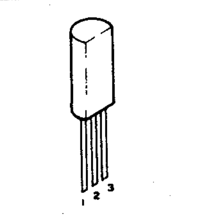
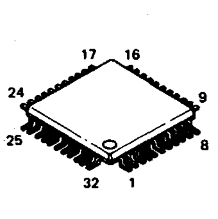
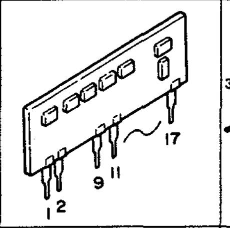
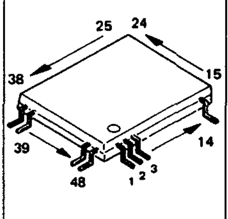
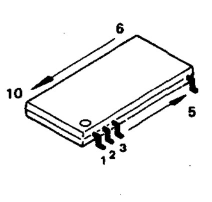
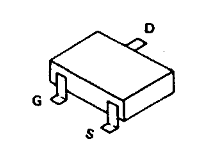
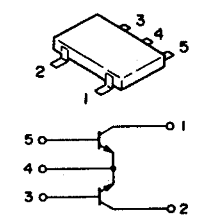
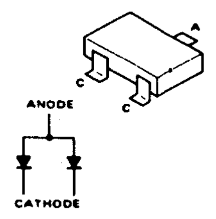
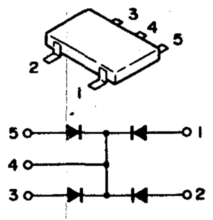
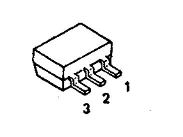
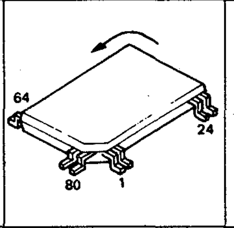
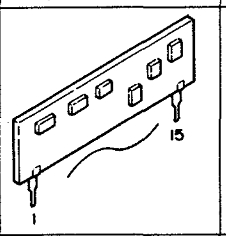
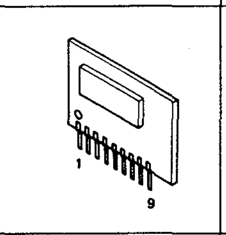
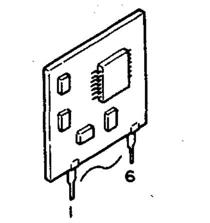
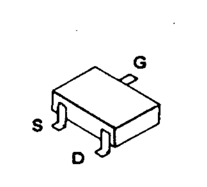
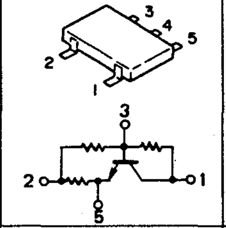
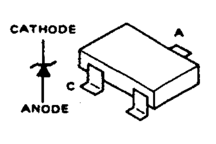
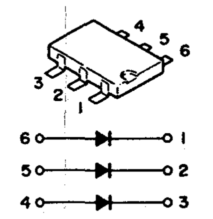
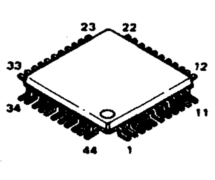
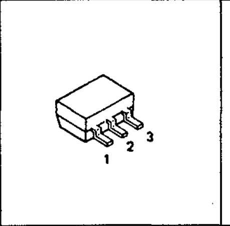
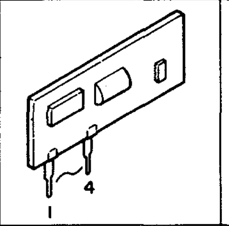
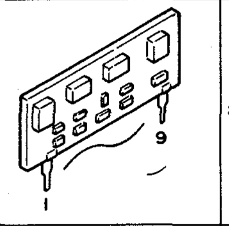
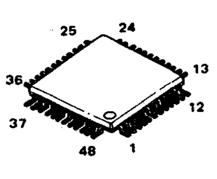
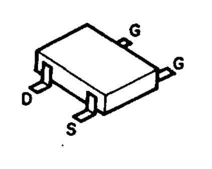
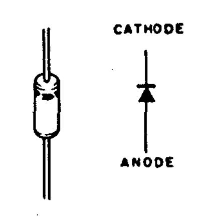
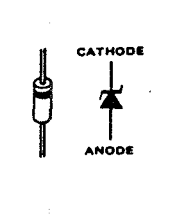
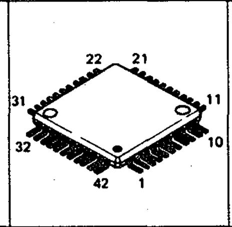
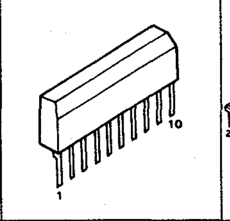
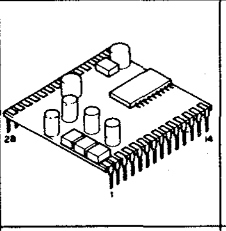
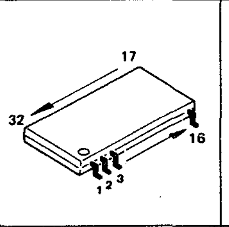
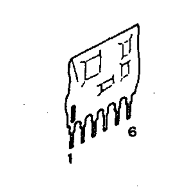
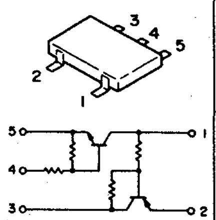
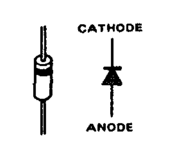
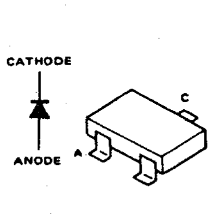
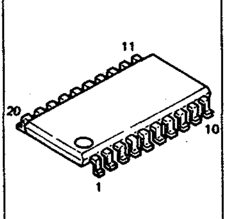
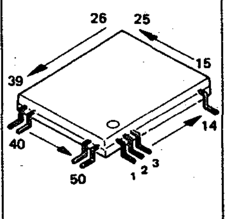
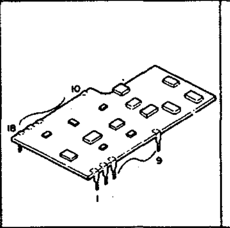
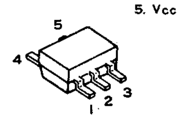
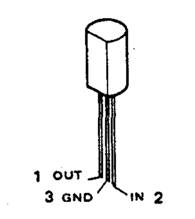
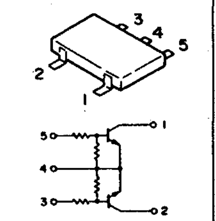
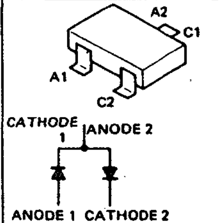
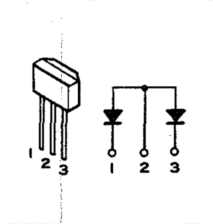
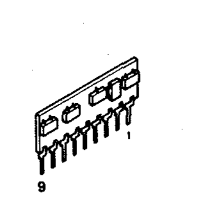
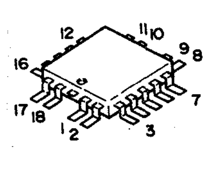
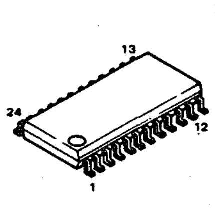
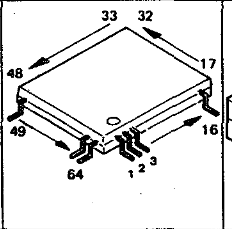
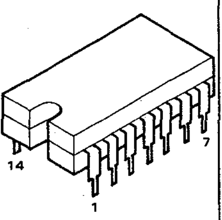
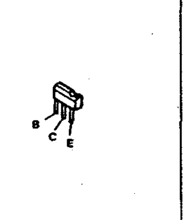
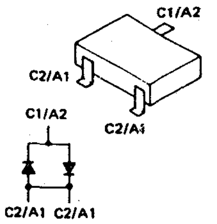
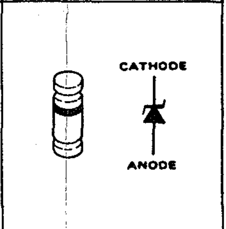
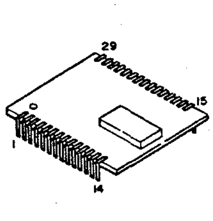
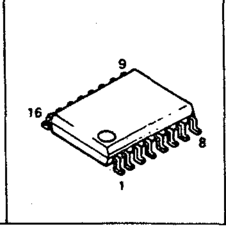
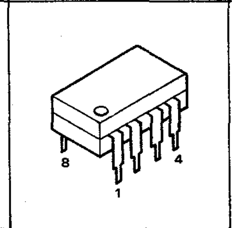
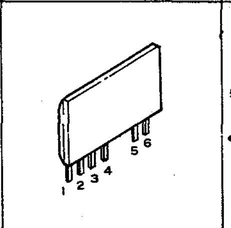
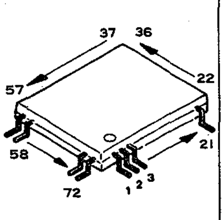
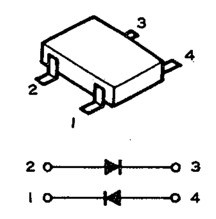
Note:
This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

4.40 SEMICONDUCTOR SHAPES

	NAME	L
	IC	
A	AFZ72F45A1	8D
	AFZ74A001X1	7A
	AFZ74A002X1	7A
	AN2275S	5D
	AN2276S	5D
	AN3212S	1C
	AN3323S	1C
	AN6308S	1A
	AN8009	6E
B	BA10324F	1B
	BA226F	1A
	BA6452F	7C
	BA6993F	1A
	BA7131F	1A
	BA7258AK	4A
	BA7288K	4A
	BA7600K	4A
	BA7606F	8B
	BA7751AF	7C
	BA7757K	2B
	BU3721K	4A
	BU3767K	4A
	BU4011BF	1B
	BU4584BF	1B
C	CP1088G	1D
	CP1089G	1D
H	HD6305ZOF-CV05	3B
	H8D7046	4C
	H8D7047	3C
	H8D7048	2C
	H8D7051A	8A
	H8D7091A	5E
I	IR3702N1	1B
L	LA7316	7C
M	MB671458	3B
	MC8089A	3D
	MC8180B	1E
	MC8181D	1E
	MN3106S	1A
	MSM6830	6A
	MSM6831	6A
	MSM6846MS	1A
	MSM6984MS	1A
	MSM6964-3MS-WK	1A
	MSM6985MS	1A
	MSM6989MS	1A
	M50966-150FP	8E
	M51648FP	6B
	M51799FP	5A
	M51798FP	5A
	M5236ML	3A
	M52410FP	6A
	M5282FP	1A
	M54543ASL	5B
	M54543ASL-A	5B
	M54641FP	2E
	M5M5256FP-10L	5B

	NAME	L
N	NJM2904E	1A
	NJM4560M	8C
S	S-81250AG	2A
	S-81252HG	2A
	S8054HN	4B
T	TC4S69F	6D
	TC4S71F	6D
	TC7S32F	6D
	THE175A	4D
	THE191A	5C
	THE245	8A
	TME234	6C
U	UPC2370GH	2D
	UPC2371GH	2D
	UPC324G2	1B
	UPD4013BG	7E
	UPD4538BG	8B
	UPD6148GS	7C
V	VC2031MP	7B
	VC2038	4E
	VC2039	7D
	VC2041	7C
	VC2043	7D
	VC2044	7D
	VC2073	7D
	VC2081	3B
	VC5026G	6A
	28VT03	5C
	6VT07	3E
	6VT08	3E
	TRANSISTOR	
D	DTA124EU	1F
	DTA144EU	1F
	DTC124EU	1F
	DTC144EK	1F
	DTC144ES	7F
	DTC144EU	1F
	DTC144WK	1F
	DTC144WU	1F
F	FMC2	5F
	FMG1	6F
	FMG2	6F
	FMU1	3G
	FMW1	2G
	FMW3	2G
2SA	2SA1036K	1F
	2SA1532	1F
	2SA1576	1F
	2SA1577	1F
	2SA1610	1F
	2SA1611	1F
	2SA881R	7F
2SB	2SB1009	7F
	2SB1218	1F
	2SB624	1F
	2SB798	1G

	NAME	L
2SC	2SC2412K	1F
	2SC3931	1F
	2SC3936	1F
	2SC4081	1F
	2SC4098	1F
	2SC4099	1F
	2SC4181	1F
	2SC4176	1F
	2SC4177	1F
	2SC4178	1F
2SD	2SD1819	1F
2SJ	2SJ146	2F
2SK	2SK198	3F
	2SK620	2F
	2SK665	2F
3SK	3SK179	4F
	DIODE	
D	DAN202U	1H
	DAP202K	2H
	DAP202U	2H
	DAP209S	6I
	DA204U	6H
E	ERA81-004	4H
F	FMN1	2I
I	IMN10	3I
M	MA141K	5I
	MA141WA	2H
	MA141WK	1H
	MA143	6H
	MA184	5H
	MA185	5H
	MA3075H	1I
	MA704	5H
	MA714	8H
	MA716	7H
R	RD5.6EB2	4I
	RD6.8EB1	4I
	RD6.8EB2	4I
	RD7.5M	1I
	RD7.5M-T1B2	1I
	RD7.5MB3	1I
	RD8.2EB2	4I
	RD8.2EBS	4I
	RD8.2MB2	1I
	RLZ8.2B	7I
	1SS133	5H

	IC					TRANSISTOR		DIODE	
	A	B	C	D	E	F	G	H	I
1									
2									
3									
4									
5									
6				1. IN 2. IN 3. GND 4. OUT 5. Vcc 					
7									
8									

SECTION 5
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

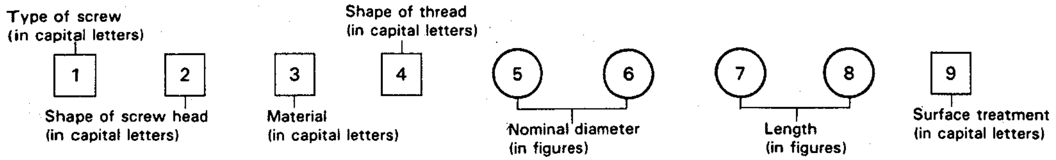
Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

NOTE: [M] indicates mechanical symbol number.

5.1 STANDARD PART NUMBER CODING

5.1.1 Screw coding

Standard screw part numbers are as follows.

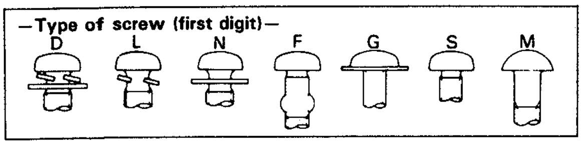

Type of screw
(in capital letters)
Shape of thread
(in capital letters)
1
2
3
4
5
6
7
8
9
Shape of screw head
(in capital letters)
Material
(in capital letters)
Nominal diameter
(in figures)
Length
(in figures)
Surface treatment
(in capital letters)

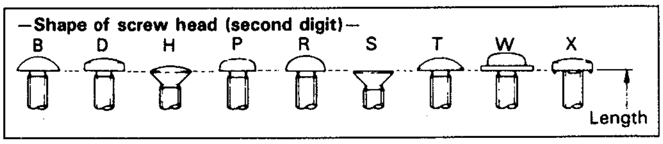
Type of screw (first digit)

S	Normal screws
D	Assembled machine screws (with plain and spring washers)
L	〃 (with spring washer)
N	〃 (with plain washer)
F	Feather screws
G	Washer head tapping screws
M	Wood screws

Shape of screw head (second digit)

B	Brazier head
D	Binding head
H	Oval countersunk head
P	Pan head
R	Round head
S	Flat head
T	Truss head
W	Washer head (machine screws)
X	Toothed head


–Type of screw (first digit)–
D
L
N
F
G
S
M

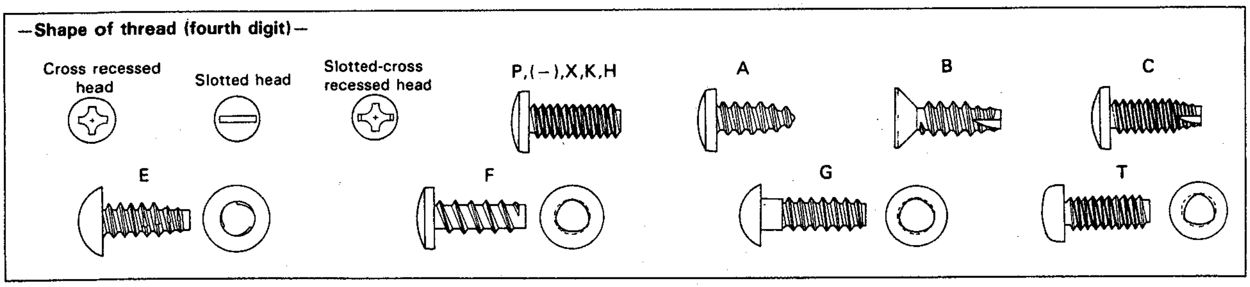

–Shape of screw head (second digit)–
B
D
H
P
R
S
T
W
X
Length

Material (third digit)

S	Steel
E	Stainless steel
C	Cast iron
U	Copper
B	Brass
P	Phosphor bronze
N	Nickel silver
Y	Cast brass
A	Aluminum
Z	Zinc alloy
K	Polycarbonate

Shape of thread (fourth digit)

P	Cross recessed head screws	
(–)	Slotted head machine screws	
X	Slotted-cross recessed head machine screws	
K	Cross recessed head machine screws for precision equipment	(type 1)
H	〃	(type 3)
A	Cross recessed head tapping screws	(type 1)
B	〃	(type 2)
C	〃	(type 3)
E	Cross recessed head special tapping screws	(brand : evertight)
F	〃	(brand : P-tight)
T	〃	(brand : taptight)
G	〃	


–Shape of thread (fourth digit)–
Cross recessed head
Slotted head
Slotted-cross recessed head
P,(–),X,K,H
A
B
C
E
F
G
T

Nominal diameter (fifth and sixth digits)

The fifth and sixth digits indicate a nominal diameter or dimension. If the dimension exceeds 10 mm, three digits are used. The number indicates a nominal diameter or dimension, given in millimeters, multiplied by ten.

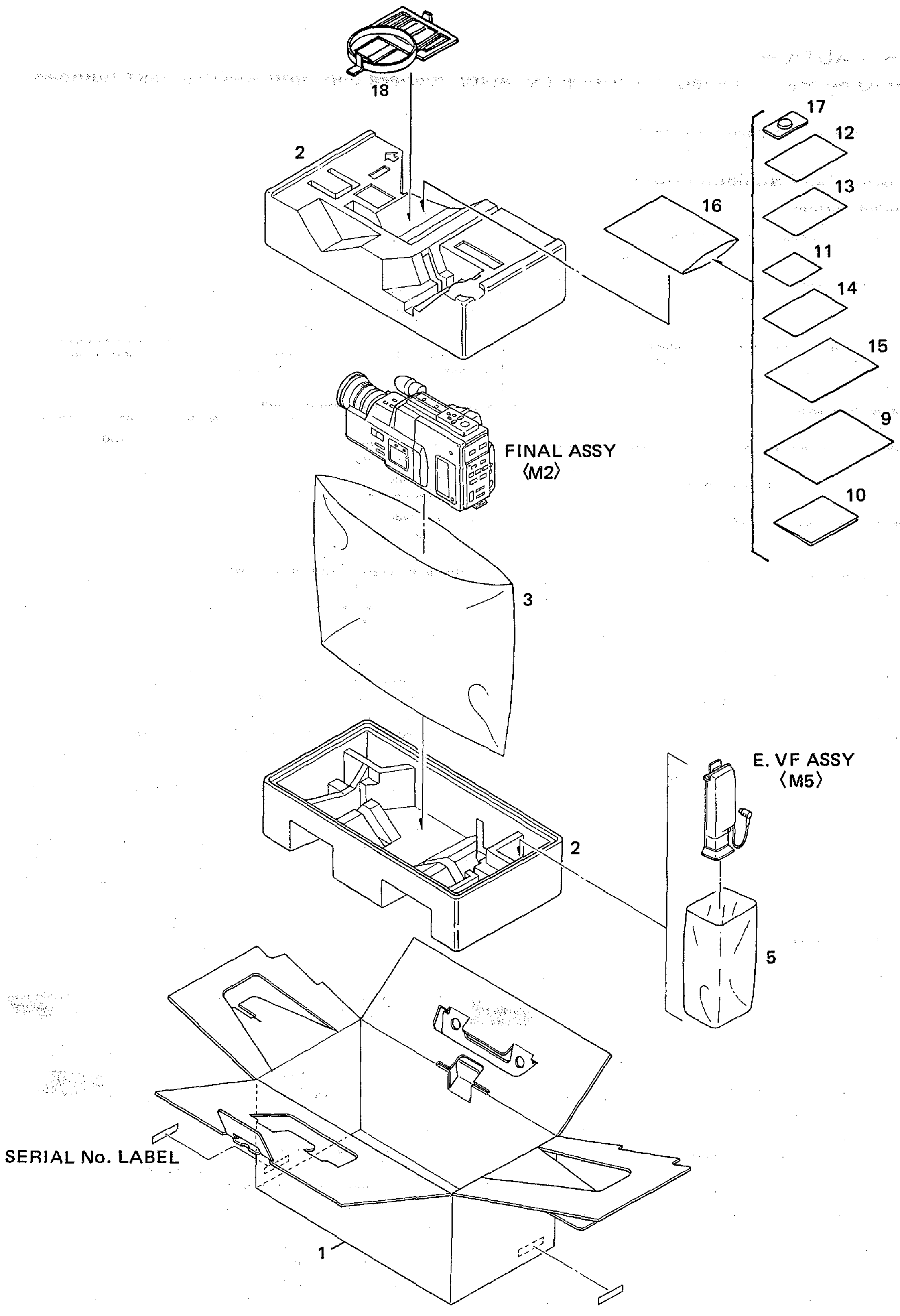
Length (seventh and eighth digits)

The seventh and eighth digits indicate length in millimeters. The preceding figure is zero when the dimension is smaller than 10 mm. For machine screws used in precision equipment whose length is given in units of 0.1 mm, the number indicates ten times the size of their length.

Surface treatment (ninth digit)

Z	Dichromate treatment after galvanizing (MFZn II-C)
N	Nickel plating (MFNiII, MFNiI)
R	Chromium plating (MBCrII, MBCrI)
G	Silver plating (SP4)
B	Black coating after plating
F	Blackening of iron (FB)
M	Blackening after galvanizing
K	Pickling of brass (PF2)
P	Phosphate treatment
W	Uni-chrome plating
L	Coated with transparent paint
A	Colored red after galvanizing (MFZnII-C)
C	Colored blue after galvanizing (MFZzII-C)
T	Colored green after galvanizing (MFZnII-C)
V	Colored purple after galvanizing (MFZnII-C)

5.2 PACKING ASSEMBLY < M1 > (For U.S.A.)


18
2
17
12
13
16
11
14
15
FINAL ASSY
⟨M2⟩
9
10
3
E. VF ASSY
⟨M5⟩
2
5
SERIAL No. LABEL
1
SERIAL No. LABEL

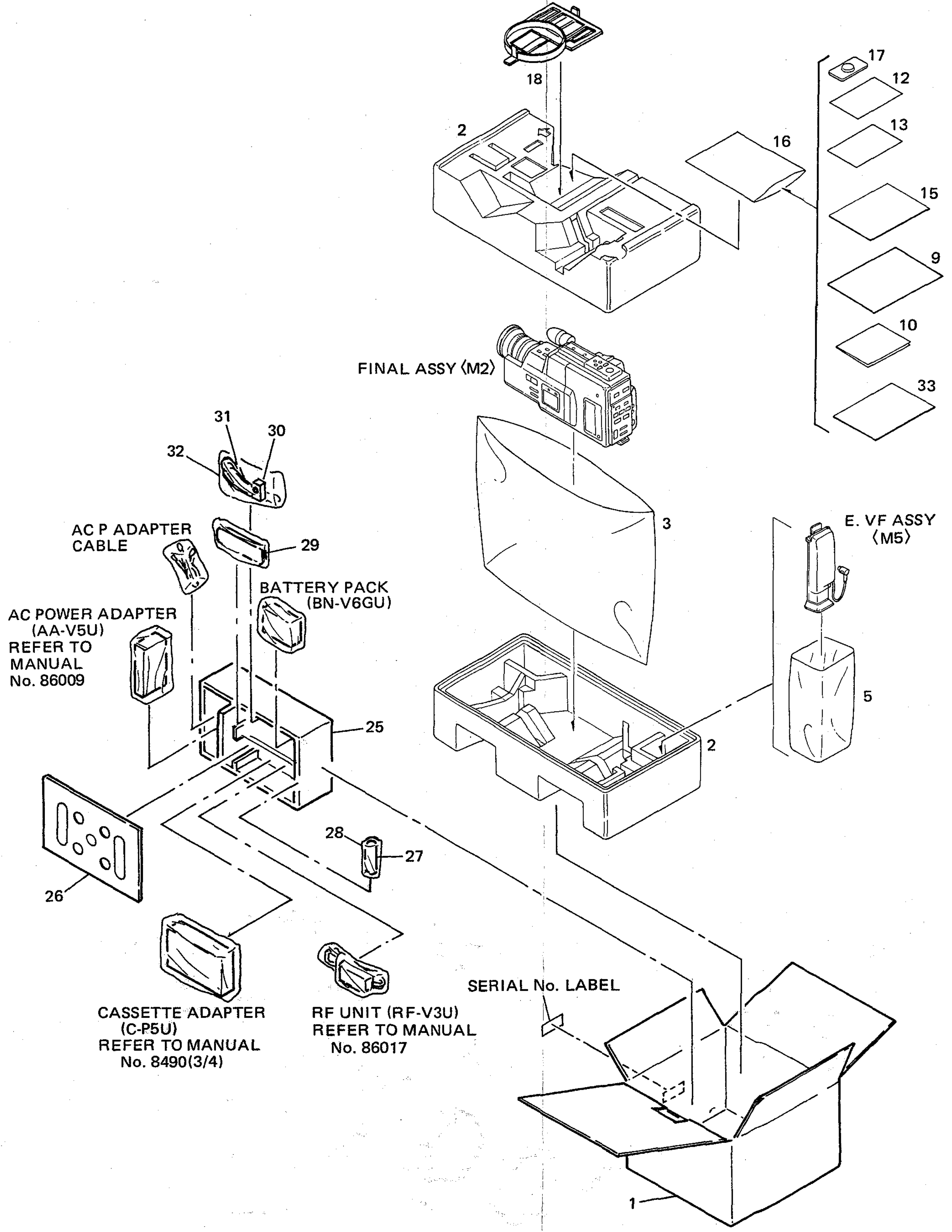
1. PACKING ASSEMBLY <M1> (For U.S.A.)

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	YQ40926	PACKING CASE
	2	YU30274A	CUSHION ASSY
	3	YQM30021-11	POLY BAG
	5	YQM30021-7	POLY BAG
⚠	9	YU30052-45	INSTRUCTIONS
	10	BT-20062A	WARRANTY CARD
	11	BT-20046D	TOLL FREE CARD
⚠	12	PU33941-3-2	SAFETY CAUTION
	13	TCN-3318	TAPE CATALOG
	14	YU40406-7	MARKET.SHEET
	15	YU30217-2	TITLE CARD
	16	QPGA025-03505	POLY BAG
⚠	17	YU40547	BATTERY
	18	YU40856-1-1	TITLE HOLDER

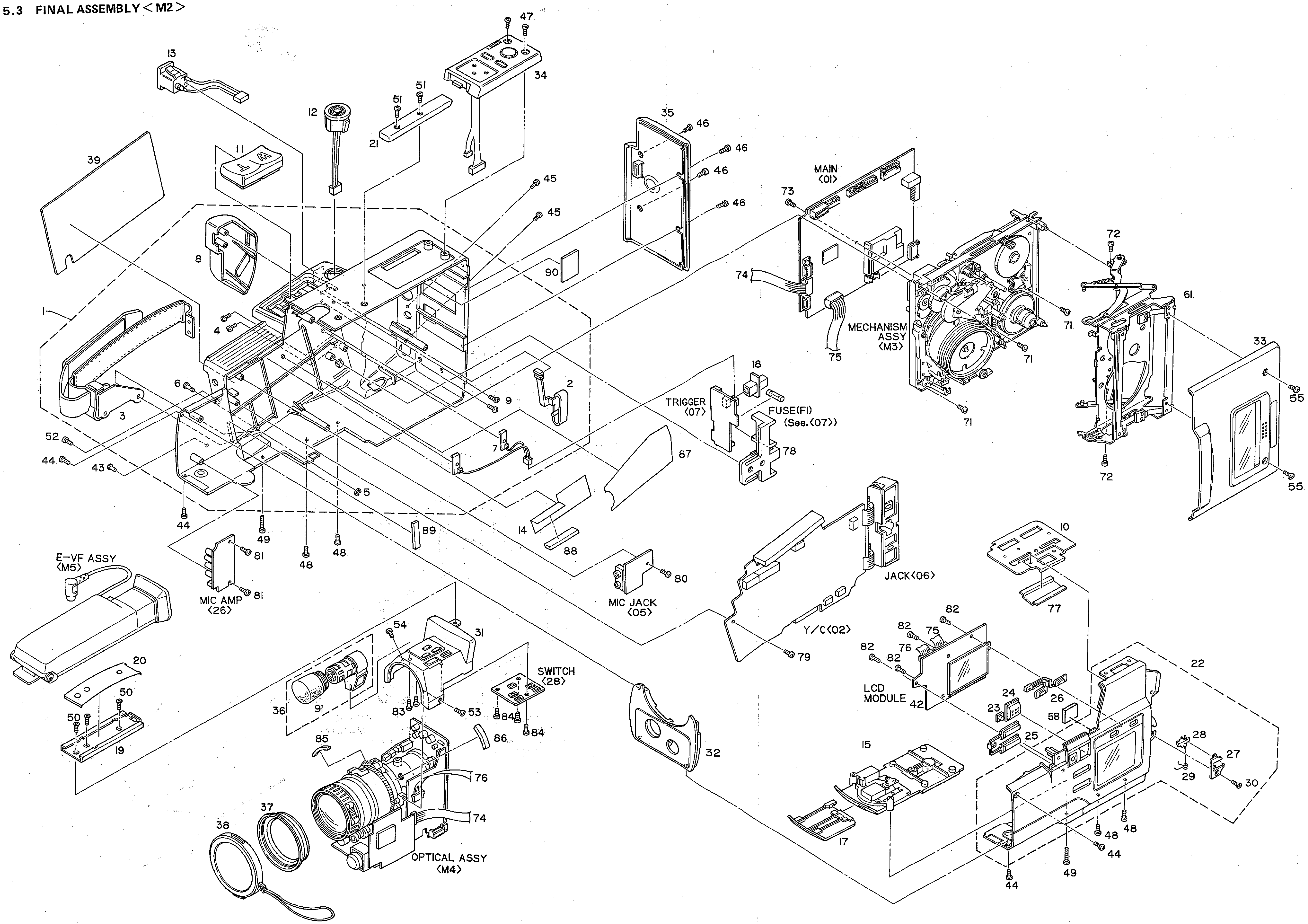
1. PACKING ASSEMBLY <M1> (For CANADA)

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	YQ30127-18-5	PACKING CASE
	2	YU30274A	CUSHION ASSY
	3	YQM30021-11	POLY BAG
	5	YQM30021-7	POLY BAG
⚠	9	YU30052-46	INSTRUCTIONS
	10	BT-20025K	WARRANTY CARD
⚠	12	PU33941-3-2	SAFETY CAUTION
	13	TCN-3318	TAPE CATALOG
	15	YU30217-2	TITLE CARD
	16	QPGA025-03505	POLY BAG
⚠	17	YU40547	BATTERY
	18	YU40856-1-1	TITLE HOLDER
	25	YQ20123-1-1	ACCESSORY TRAY
	26	YQ40493-1-1	ACCESSORY TRAY SHEET
	27	UM-3DJ	BATTERY
	28	PQM30021-48	POLY BAG
⚠	29	YQ10051A-3	SHOULDER STRAP
⚠	30	PU59135	MATCHING TRANSFORMER
⚠	31	PU54394-2	CABLE ASSY
	32	QPGA015-02505	POLY BAG
	33	BT-20071A	INSTRUCTION GUIDE

PACKING ASSEMBLY <M1> (For CANADA)


18
17
12
2
16
13
15
9
10
FINAL ASSY ⟨M2⟩
33
31
30
32
AC P ADAPTER CABLE
29
3
E. VF ASSY ⟨M5⟩
BATTERY PACK (BN-V6GU)
AC POWER ADAPTER (AA-V5U) REFER TO MANUAL No. 86009
5
25
2
28
27
26
SERIAL No. LABEL
CASSETTE ADAPTER (C-P5U) REFER TO MANUAL No. 8490(3/4)
RF UNIT (RF-V3U) REFER TO MANUAL No. 86017
1

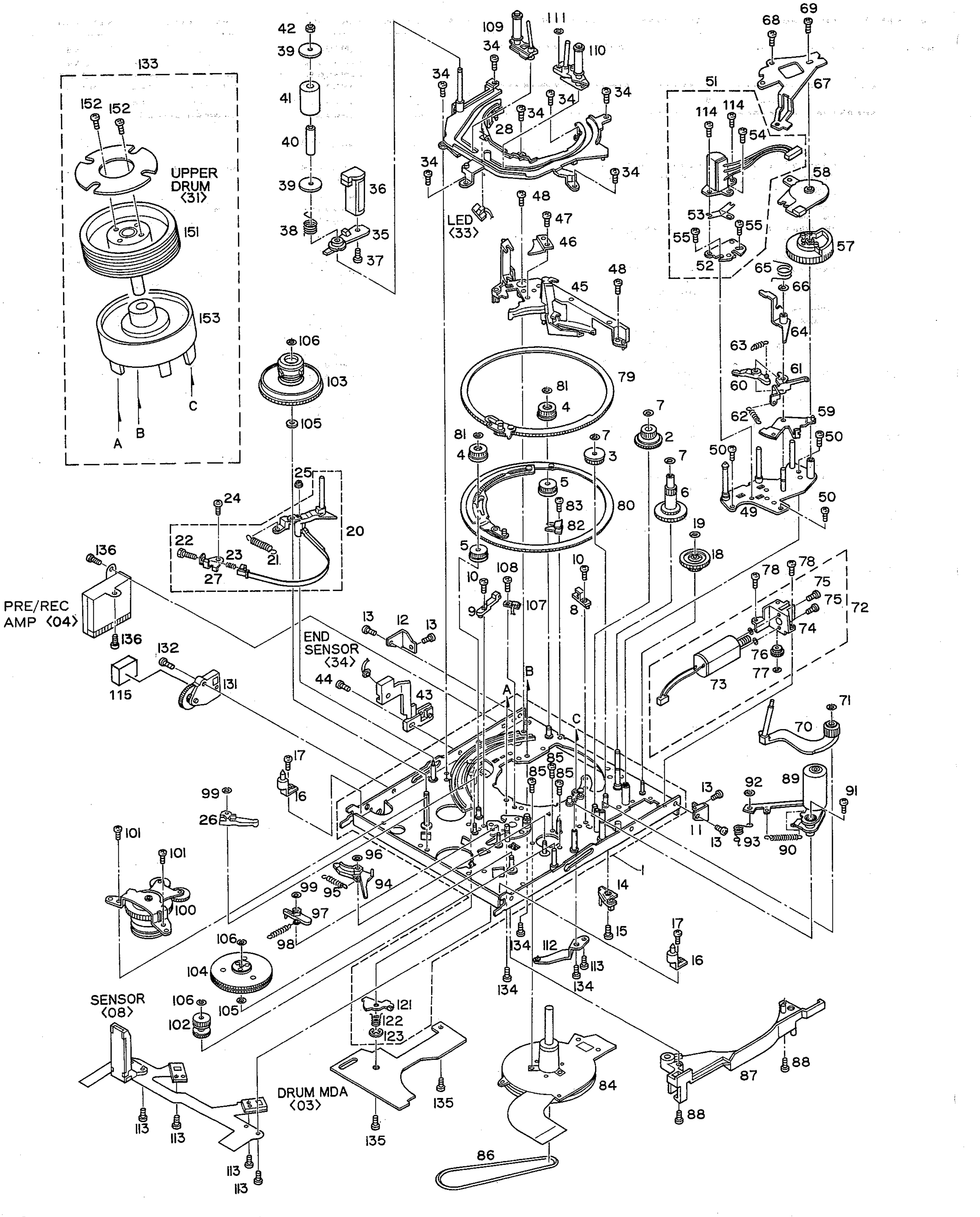
5.3 FINAL ASSEMBLY < M2 >


47
13
34
51
51
12
21
35
46
46
46
46
39
11
45
45
MAIN
〈01〉
73
72
8
90
74
1
4
2
9
9
MECHANISM
ASSY
〈M3〉
75
71
71
71
61
33
55
55
72
6
3
52
44
43
7
18
TRIGGER
〈07〉
FUSE(F1)
(See.〈07〉)
78
87
5
14
88
89
44
49
48
48
E-VF ASSY
〈M5〉
81
81
MIC AMP
〈26〉
80
MIC JACK
〈05〉
JACK〈06〉
10
77
Y/C〈02〉
79
82
82
75
76
82
82
LCD
MODULE
42
22
20
50
50
19
54
31
36
91
83
53
84
84
SWITCH
〈28〉
85
86
76
74
OPTICAL ASSY
〈M4〉
38
37
32
24
26
23
58
25
15
17
28
27
29
30
48
48
44
49
44

2. FINAL ASSEMBLY <M2>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	1	YQ10092B	LOWER CASE ASSY,INCL 2-9
	2	YQ30091-2-4	TRIGGER BUTTON
	3	YQ20064C-15	GRIP BELT ASSY
	4	SSSP2006D	SCREW,X2
	5	REE2500	E.RING
	6	YQ40413	STUD
	7	ML-Y00062A	BATT, WIRE ASSY
	8	YQ30098-26	FINGER REST
	9	SDSF2006Z	TAPPING SCREW,X2
	10	YQ40417	SHOE BRACKET
	11	YU40204-4	ZOOM SWITCH
	12	YS4011B	VF CONNECTOR
	13	YS4004B	DC JACK
	14	YQ40544	SHIELD SPACER 1
	15	YQ30099A-5	BASE ASSY
⚠	17	YQ30276-1-3	LITHIUM B. COVER
	18	YQ40418-2	ALARM KNOB
	19	YQ40419-1-2	SHOE
	20	YQ40420-1-2	SHOE SPRING
	21	YQ40421-1-1	DECO PLATE
⚠	22	YQ10086B-2	UPPER CASE ASSY,INCL 27-30
	23	YQ40705-2	FULL AUTO BUTTON
	24	YQ40706	FOCUS BUTTON
	25	YQ40708	WHITE BALANCE BUTTON
	26	YQ40707	MEMORY BUTTON
	27	YQ30110	TAPE GUIDE HOLDER
	28	YQ30109-1-1	TAPE GUIDE
	29	YQ40451	TORSION SPRING
	30	SSSG1740M	SCREW
⚠	31	YQ30246B-6	FRONT COVER ASSY
⚠	32	YQ30247B-1	FRONT PANEL ASSY
⚠	33	YQ30250B-4	CASSETTE COVER ASSY
	34	YQ30059-23	DATE UNIT
	35	YQ20078-13-9	OPERATION UNIT
	36	YU40631	MICROPHONE , INCL 91
	37	YU40190	LENS HOOD
	38	YQ40437A-2	LENS HOOD CAP ASSY
⚠	39	YU30207	B.BASE SHEET
	42	YU40634-2-1	LCD MODULE
	43	YQ40703	CAP
	44	YQM30032-2-2	SPECIAL SCREW,X4 M2X5
	45	YQM30032-6-2	SPECIAL SCREW,X2 M2X8
	46	YQM30032-2-2	SPECIAL SCREW,X4 M2X5
	47	YQM30032-4-2	SPECIAL SCREW,X2 M2X6
	48	YQM30032-1-2	SPECIAL SCREW,X4 M2X4
	49	YQM30032-23	SPECIAL SCREW,X2 M2X13
	50	SSSP2005D	SCREW,X3
	51	YQM30032-16-2	SPECIAL SCREW,X2 M2X8
	52	YQM30032-1-2	SPECIAL SCREW M2X4
	53	YQM30032-28	SPECIAL SCREW M2.6X14
	54	YQM30032-1-2	SPECIAL SCREW M2X4
	55	YQM30032-1-2	SPECIAL SCREW,X2 M2X4
	58	YQ40520	DAMPER COVER
	61	YQ20068B-8	CASSETTE HOUSING ASSY
	71	SPSG2608Z	SCREW,X3
	72	SPSK1730M	SCREW,X2
	73	YQ40691	SPECIAL SCREW,M1.7X4
	74	YU40614-2	FLAT WIRE 3
	75	YU40615	FLAT WIRE 4
	76	YU40616	FLAT WIRE 5
	77	YQ40667	SCREW COVER
	78	YQ30090-1-1	TRIGGER BOARD STOPPER
	79	SPSG2005M	SCREW
	80	SDSF2006Z	TAPPING SCREW
	81	SDSF2006Z	TAPPING SCREW ,X2
	82	SDSF2005Z	TAPPING SCREW,X4
	83	YQM30032-29	TAPPING SCREW,X2
	84	YQM30032-29	TAPPING SCREW,X3
	85	YQM30029-4	SPACER
	86	YQM30029-5	SPACER
	87	YQ40545	SHIELD SPACER 2
	88	YQM30029-8	SPACER
	89	YQM30029-7	SPACER
	90	YQM30029-9	SPACER
	91	YU40631-001	WIND SCREEN

5.4 MECHANISM ASSEMBLY <M3>


133
152
152
UPPER DRUM <31>
151
153
A
B
C
42
39
41
40
39
36
38
35
37
109
111
110
34
28
LED <33>
48
47
46
45
48
68
69
67
51
114
114
54
58
53
55
55
52
57
65
66
64
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49
106
103
105
79
81
4
7
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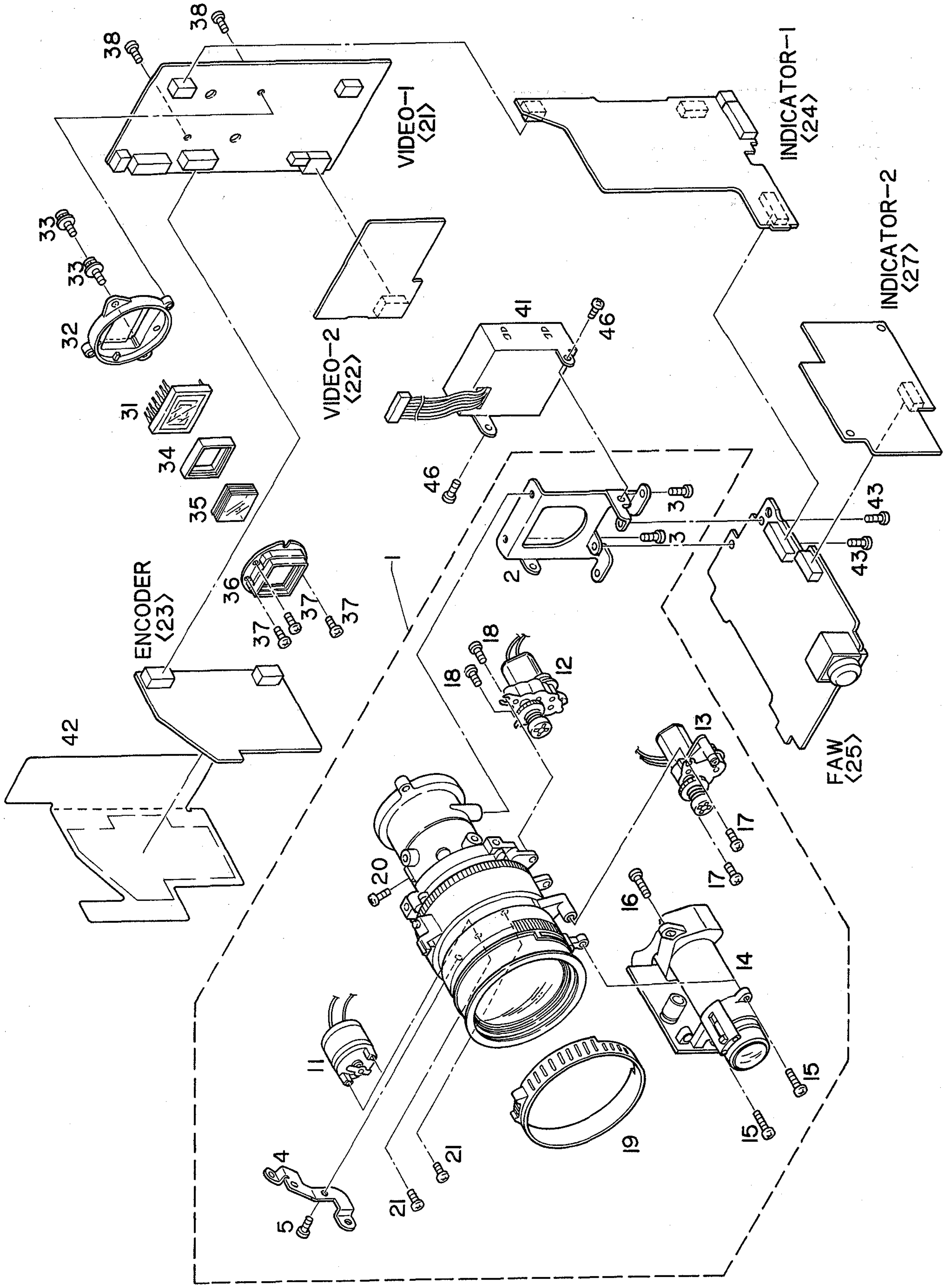
3. MECHANISM ASSEMBLY <M3>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	YQ10089A-5	MAIN DECK ASSY,INCL 121-123
	2	YQ40744	LOADING GEAR 1
	3	YQ40123	LOADING GEAR 2
	4	YQ40124	RING G.GEAR(S) , X2
	5	YQ40125	RING G.GEAR(T) , X2
	6	YQ30271	TERMINAL GEAR
	7	PQM30017-27	SLIT WASHER , X3
	8	YQ40746	RING GUIDE 1
	9	YQ40128	RING GUIDE 3
	10	SPSH1725M	SCREW,X2
	11	YQ40747	SUPPORT(L)
	12	YQ40748	SUPPORT(R)
	13	SPSH1725M	SCREW,X4
	14	YQ40749	LOADING GUIDE
	15	SPSH1740M	SCREW
	16	YQ40801-1-4	GUIDE PIN , X2
	17	SPSH1725M	SCREW , X2
	18	YQ40750	MIDDLE GEAR
	19	PQM30017-27	SLIT WASHER
	20	YQ40389A-2	TENSION SERVO AY,INCL21-23,27
	21	YQM30001-13-1	TENSION SPRING
	22	SPSK1780M	MINI SCREW
	23	YQM30002-1	COMPRESSION SPRING
	24	SPSH1725M	SCREW
	25	YQ40059	CAP
	26	YQ30322	S.BRAKE LINK
	27	YQ40266	ADJUST PLATE
	28	YQ40759A-3	GUIDE RAIL ASSY
	34	SPSH1725M	SCREW , X7
	35	YQ20050-1-6	FULL ERASE HEAD ARM
	36	YS40015E	FULL ERASE HEAD
	37	SPSK1630M	SCREW
	38	YQ40391-1-2	TORSION SPRING
	39	YQ40063	FLANGE , X2
	40	YQ40064-1-1	COLLAR
	41	YQ40065-2	IMPEDANCE ROLLER
	42	NTS2000N	NUT
	43	YQ30265	END SENSOR BRACKET
	44	SPSH1740M	SCREW
	45	YQ20138	UV BASE
	46	YQ40068-1-1	POLE BASE GUIDE
	47	SPSH1730M	MINI SCREW
	48	SPSH1730M	MINI SCREW , X2
	49	YQ40763A-4	SUB DECK ASSY
	50	SPSH1725M	SCREW , X3
	51	YS40016C	AUDIO/CONTROL HEAD .INCL 52–54, 114
	52	YQ40768	X PLATE
	53	YQ40354	HEAD SPRING
	54	YQ40904B	ALOCK SCREW, M1.7X30
	55	YQ40904A-1	ALOCK SCREW,X2 M1.7X20
	57	YQ20057-1-2	CAM GEAR
	58	YU40619	CAM ENCODER
	59	YQ40769A-3	ARM GEAR ASSY
	60	YQ40358	LOCK ARM 1
	61	YQ40771	LOCK ARM 2
	62	YQ40342	TENSION SPRING
	63	YQ40362	TENSION SPRING
	64	YQ40772A	LOCK ARM 3 ASSY
	65	YQ40361	TORSION SPRING
	66	PQM30017-25	SLIT WASHER
	67	YQ30266-1-3	MIDDLE POLE STOPPER
	68	SPSH1725M	SCREW
	69	SPSH1780M	SCREW
	70	YQ40774A	MIDDLE POLE ASSY
	71	PQM30017-23	SLIT WASHER
	72	YQ30272A-3	MC M.BRAKET ASSY , INCL 73-77
⚠	73	YU40620V-1	MODE CTL MOTOR
	74	YQ40777A-1	MODE CTL M.BRAKET ASSY
	75	SPSH1425M	SCREW,X2
	76	YQ40778	WORM WHEEL
	77	PQM30017-27	SLIT WASHER
	78	SPSH1730M	SCREW,X2
	79	YQ40779A	SUP LOADING RING ASSY
	80	YQ40781A-3	TU LOADING RING ASSY
	81	PQM30017-27	SLIT WASHER , X2
	82	YQ40784	RING GUIDE 2
	83	SPSH1725M	SCREW
⚠	84	YU40621V	CAPSTAN MOTOR ASSY
⚠	OR	YU40930V	CAPSTAN MOTOR ASSY
	85	SPSH1725M	SCREW,X3
	86	YQM30003-3	BELT
	87	YQ30268	CAPSTAN MOTOR COVER
	88	SPSH1740M	SCREW , X2
	89	YQ40785A-1	PINCH ROLLER ARM ASSY
	OR	YQ40785B-1	PINCH ROLLER ARM ASSY
	90	YQ40793	TENSION SPRING
	91	PQ41535-4	SCREW
	92	PQM30017-27	SLIT WASHER
	93	YQ40794-1-1	TORSION SPRING
	94	YQ30269	TU BREAKE LEVER
	95	YQ40796-1-1	TENSION SPRING
	96	PQM30017-27	SLIT WASHER
	97	YQ30270	SEARCH BREAKE LEVER
	98	YQ40798-1-1	TENSION SPRING
	99	PQM30017-27	SLIT WASHER,X2
	100	YU40622-1-1	CENTER PULLEY BRACKET ASSY
	101	SPSH1725M	SCREW , X2
	102	YQ40147-1-1	TAKE-UP GEAR ASSY
	103	YU40623	SUP.REEL DISC ASSY
	104	YU40624-1-1	TU CLUTCH ASSY
	105	Q03093-835	WASHER , X2
	106	PQM30017-27	SLIT WASHER , X3
	107	YU40234	DEW SENSOR
	108	SPSH1725M	SCREW
	109	YQ40083C-7	SUP POLE BASE ASSY
	110	YQ40799B	TU POLE BASE ASSY
	111	PQM30017-27	SLIT WASHER
	112	YU40716	BRUSH
	113	SPSH1730M	MINI SCREW , X5
	114	YQ40904C	ALOCK SCREW, X2 M1.7X25
	115	YQ40520	DAMPER COVER
	121	YQ40737	EJECT LEVER
	122	YQ40739-1-1	TORSION SPRING
	123	REE4000	E REING
	131	YU40001	DAMPER
	132	SPSH1760M	SCREW
⚠	133	YDV2009A	DRUM ASSY , INCL 151-153
	134	SPSH1740M	MINI SCREW,X3
	135	PQ41450-2	SCREW,X2
	136	SPSH1720M	SCREW,X2
	151	YDM2001A-3	UPPER DRUM ASSY
	152	PQ41535-4	SCREW , X2
	153	YDM2004F-3	LOWER DRUM MOTOR ASSY

5.5 OPTICAL BLOCK ASSEMBLY < M4 >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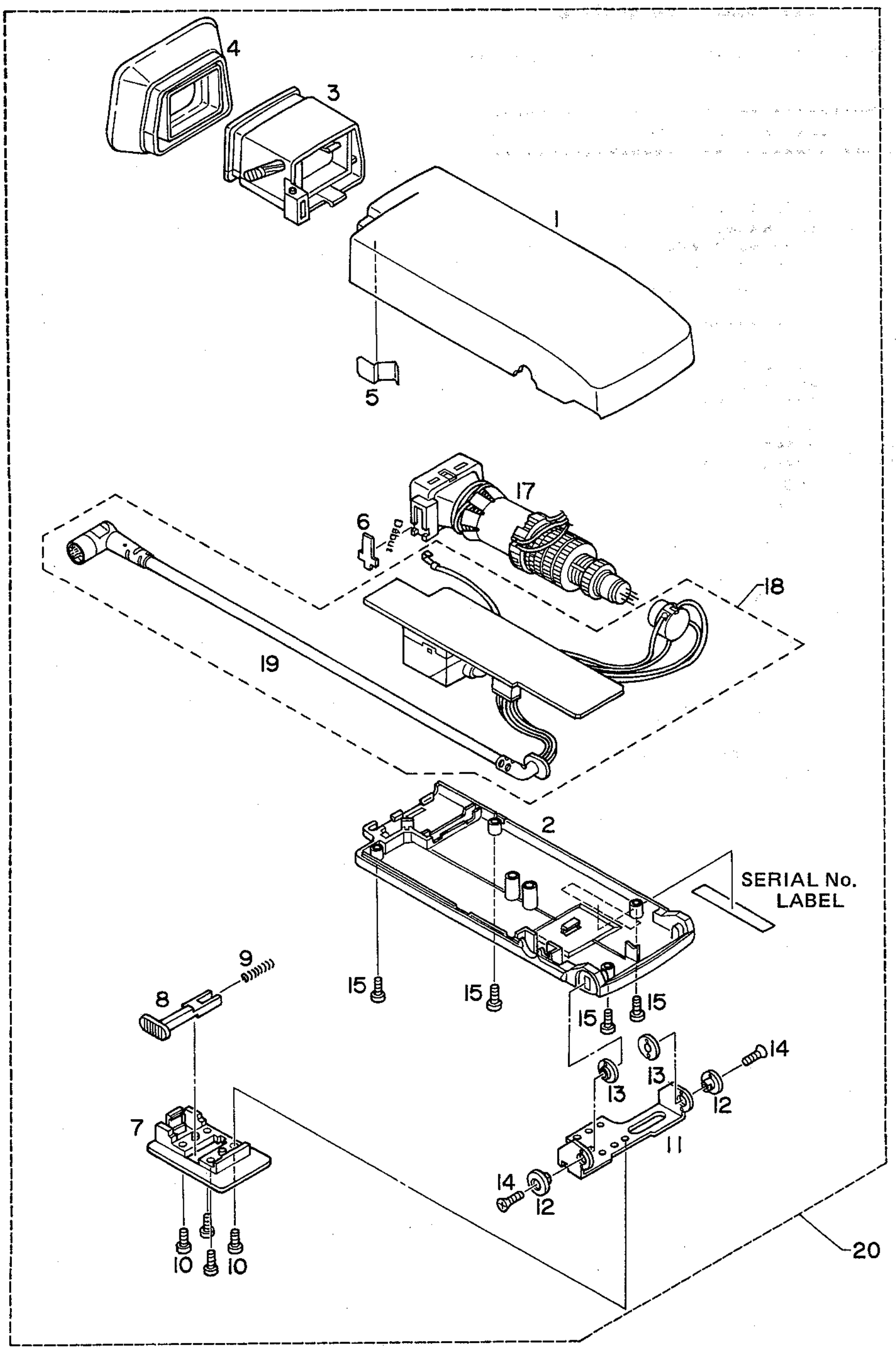
4. OPTICAL BLOCK ASSEMBLY <M4>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	1	YU40635-2-2	OPTICAL BLOCK ASSY
	2	YQ40826-1-2	OP BRACKET
	3	SDSF2605Z	TAPPING SCREW , X2
	4	YQ40711	LENS BRACKET
	5	SDSF2605Z	TAPPING SCREW
	11	YU40189-001	IRIS MOTOR
	12	YU40189-002	ZOOM MOTOR
	13	YU40189-003	FOCUS MOTOR
	14	YU40189-004	AF UNIT
	15	YU40189-005	SCREW , X2
	16	YU40189-006	SCREW
	17	YU40189-007	SCREW , X2
	18	YU40189-008	SCREW , X2
	19	YU40189-009	RUBBER
	20	YU40189-010	SCREW
	21	YU40189-011	SCREW , X2
⚠	31	UPD3551D	IC(CCD)
	32	YQ30095	IMAGER HOLDER
	33	DPSP2008Z	SCREW , X2
	34	PQ42339	SPACER RUBBER
	35	YU40636	OPTICAL LPF
	36	YQ30096-2	OPTICAL LPF HOLDER
	37	SPSK2004F	MINI SCREW , X3
	38	SPSP2004Z	SCREW , X2
⚠	41	YU40838	DC-DC CONVERTER
	42	YU30212	SHIELD PLATE
	43	SPSP2004Z	SCREW,X2
	46	SPSP2004Z	SCREW,X2

5.6 ELECTRONIC VIEWFINDER ASSEMBLY <M5>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     *      5. ELECTRICAL VIEWFINDER ASSEMBLY <M5>     *
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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	YU30181-015	TOP CASE
	2	YU30181-002	BOTTOM CASE
	3	YU30181-003	LENS ASSY
	4	YU30181-004	LENS RUBBER
	5	YU30181-005	PLATE SPRING
	6	YU30181-014	HIGH VOLTAGE COVER
	7	YU30181-006	SHOE
	8	YU30181-007	LEVER
	9	YU30045-016	SPRING
	10	YU30045-013	SCREW , X4
	11	YU30181-008	ARM
	12	YU30181-009	COVER , X2
	13	YU30045-022	BUSHING , X2
	14	YU30181-010	SCREW , X2
	15	YU30045-014	SCREW , X4
	17	YU30181-011	CRT ASSY
	18	YU30181-012	E.VF BOARD ASSY ,INCL 19
	19	YU30181-013	VF CABLE
⚠	20	YU30181B-3	E.VIEWFINDER ASSY

SECTION 6
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

RESISTORS— All resistance values are in ohms (Ω), unless otherwise indicated.

k	: 1,000 (Kilo)
M	: 1,000,000 (Mega)
Chip R	: Chip Resistor
Chip VR	: Chip Variable Resistor
Comp. R	: Composition Resistor
CR	: Carbon Film Resistor
FR	: Fusible Resistor
MFR	: Metal Film Resistor
MPR	: Metal Plate Resistor
OMR	: Oxide Metal Film Resistor
PMR	: Precision Metal Film Resistor
UFR	: Unflammable Resistor
VR	: Variable Resistor (Potentiometer)
WR	: Wire Wound Resistor

CAPACITORS—All capacitance values are in μF, unless otherwise indicated.

pF	: μμF (Pico farad)
C Cap	: Caramic Capacitor
Chip Cap	: Chip Capacitor
Chip T Cap	: Chip Tantalum Capacitor
E Cap	: Electrolytic Capacitor
FM Cap	: Film Mica Capacitor
LL Cap	: Low Leak Current Electrolytic Capacitor
MM Cap	: Metalized Mylar Capacitor
MP Cap	: Metalized Paper Capacitor
MY Cap	: Mylar Capacitor
NP Cap	: Non-polar Capacitor
PC Cap	: Polycarbonate Capacitor
PP Cap	: Polypropylene Capacitor
PS Cap	: Polystyrol Capacitor
T Cap	: Tantalum Capacitor
TF Cap	: Thin Film Capacitor
TR Cap	: Trimmer Capacitor

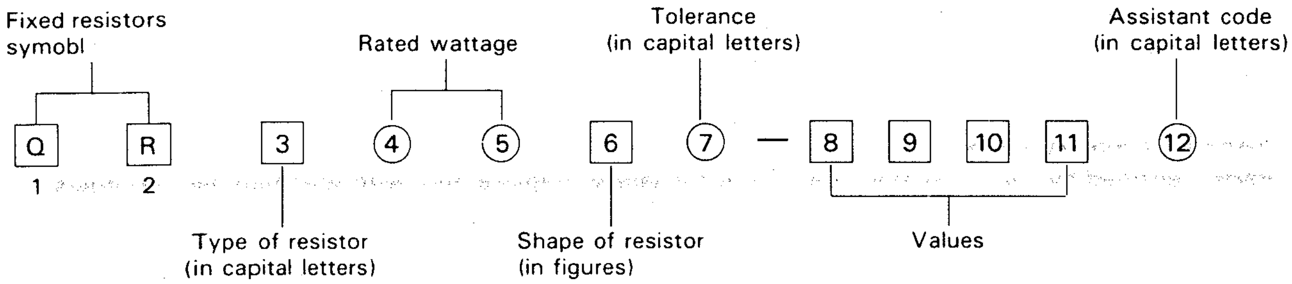
NOTES:

- [2 digits] indicates circuit board symbol number.
- "X " indicates quantity per set.

6.1 STANDARD PART NUMBER CODING

6.1.1 Fixed resistor coding

Fixed resistor part numbers are as follows.


Fixed resistors symobl
Rated wattage
Tolerance (in capital letters)
Assistant code (in capital letters)
Q
R
3
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⑤
6
⑦
—
8
9
10
11
⑫
1
2
Type of resistor (in capital letters)
Shape of resistor (in figures)
Values

Type of resistor (third digit)

C	Composition resistors
D	Carbon film resistors
F	Unflammable resistors
G	Oxide metal film resistors
H	Fusible resistors
M	Metal plate resistors
S	Metal glazed resistors
V	Precision metal film resistors
W	Wire wound resistors
X	Metal film resistors
Z	Special resistors

Rated wattage (fourth and fifth digits)

A0	1/10 W
18	1/8 W
16	1/6 W
14	1/4 W
12	1/2 W
01	1 W
02	2 W
03	3 W
04	4 W
05	5 W
06	6 W
07	7 W
75	7.5 W
08	8 W
10	10 W
15	15 W
A6	16 W
20	20 W
30	30 W

Tolerance (seventh digit)

F	± 1 %
G	± 2 %
J	± 5 %
K	± 10 %
M	± 20 %

Assistant code (twelfth digit)

A	Small type
B	Small type
S	Small type
Y	Lead taping
Z	Lead taping

Values (eighth — tenth or eleventh digits)

examples:

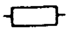
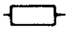
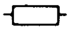
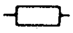
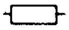
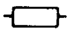
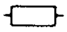
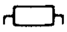
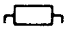
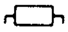
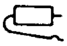
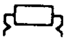
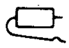
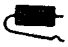
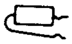
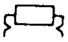
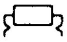
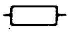
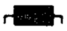
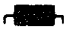
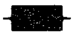
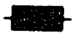
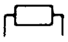
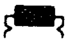
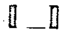
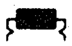
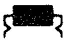
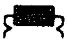
R47		0.47 Ω
4R7		4.7 Ω
470	47×10^0	47 Ω
471	47×10^1	470 Ω
472	47×10^2	4.7 kΩ
473	47×10^3	47 kΩ
474	47×10^4	470 kΩ
475	47×10^5	4.7 MΩ

QRV resistance shown by four digits:

4640	464×10^0	464 Ω
4641	464×10^1	4.64 kΩ
4642	464×10^2	46.4 kΩ

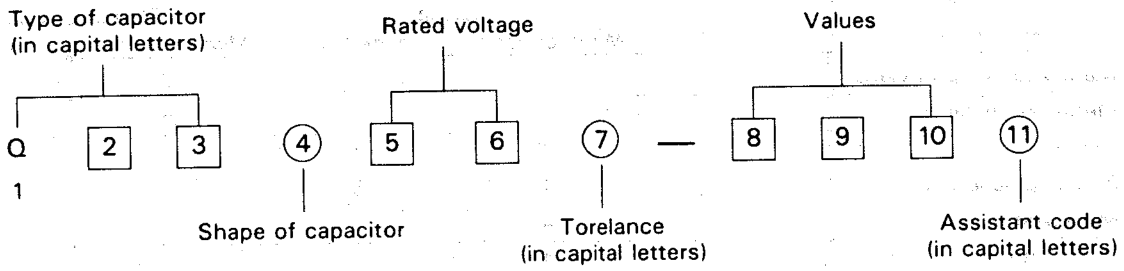
Shape of resistor (sixth digit)

Note: ■ indicates flame retardant resistor.

Type of resistor / Shape of resistor	C	D	F	G	H	M	S	V	W	X
1										
2										
3										
4										
5									(L) type	
6										
7			Lug (B) type							
8			Lug (A) type				 Chip			
9			Lug (C) type							

6.1.2 Fixed capacitor coding

Fixed capacitor part numbers are as follows.


Type of capacitor
(in capital letters)
Rated voltage
Values
Q
1
2
3
4
5
6
7
—
8
9
10
11
Shape of capacitor
Torelance
(in capital letters)
Assistant code
(in capital letters)

Ceramic capacitors

Type of capacitor (first – third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Mono-direction	Kink lead	Axial lead	Axial forming lead	Chip
QCC	Ceramic	1		4	5	
QCD	High capacitance					A
QCF	High capacitance	1,4	3			8,A
QCS	Temperature compensation	1	3	4	5	8,A
QCT	Temperature compensation	Special coding				8,A
QCV	Ceramic			1	3	
QCX	Ceramic			1	3	
QCY	High capacitance	1,4	3	6	7	8,A
QCZ	Special type	Special coding				
QCB	Ceramic			B	C	

Electrolytic capacitors

Type of capacitor (first-third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Tubular	Mono-direction	Anti-stress	Forming	Snap-in
QEB	Low leakage		4	5	6	
QEC	Low leakage		4,8,A	9,B	6,C	
QEE	Tantalum (normal)		4	5	6	
	Tantalum (small)		8			
QEF	Chip tantalum	8 (chip type)				
QEG	Low impedance		4			
QEK	Miniature type		4	5	6	
QEL	Small type		4	5	6	7
QEM	Small type		4,A	5	6	
QEN	Non-polar	2	4	5	6	
QEP	Non-polar (small)		4,A	5,B	6,C	
QER	Miniature type		4	5	6	
QET	Small type	2	4,A	5,B	6,C	7
QEU	Small type		4	5	6	
QEV	Small type		4		6	7
QEW	Normal	2	4	5	6	7

Paper film capacitors

Type of capacitor (first – third digits)		Shape of capacitor (fourth digit)				
		Tubular	Normal		Flame retardant	
Symbol	Characteristics		Mono-direction	Kink lead	Mono-direction	Kink lead
QFA	Metalized polypropylene				7	
QFE	Metalized mylar				5	
QFF	Film mica		4			
QFG	Polypropylene film		4	8		
QFH	Metalized mylar	2	4	3	5,7	6
QFJ	Mylar (special)		4			
QFK	Metalized mylar (small)				5	
QFM	Mylar	2	4	3,7	5	6
QFN	Mylar (small)		4	3		
QFP	Polypropylene		4	3,8		
QFS	Polystyrole	2	4	3		
QFV	Thin film		4	8		
QFZ	Special type	Special coding				

Rated voltage (fifth and sixth digits)

Sixth digit / Fifth digit	A	B	C	D	E	F	G	H	J	K	V	W	X
0						3.15	4.0		6.3				
1	10		16	20	25		40	50	63	80	35		
2	100	125	160	200	250	315	400	500	630		350	450	600
3	1000	1250		2000				5000					

Tolerance (seventh digit)

A	$^{+100}_{-10}$ %	M	±20 %
F	±1 %	N	±30 %
G	±2 %	P	$^{+100}_{-0}$ %
H	$^{+50}_{-10}$ %	R	$^{+30}_{-10}$ %
J	±5 %	X	$^{+40}_{-20}$ %
K	±10 %	Z	$^{+80}_{-20}$ %

Values (eighth – tenth digits)

Example : Values are in picofarads

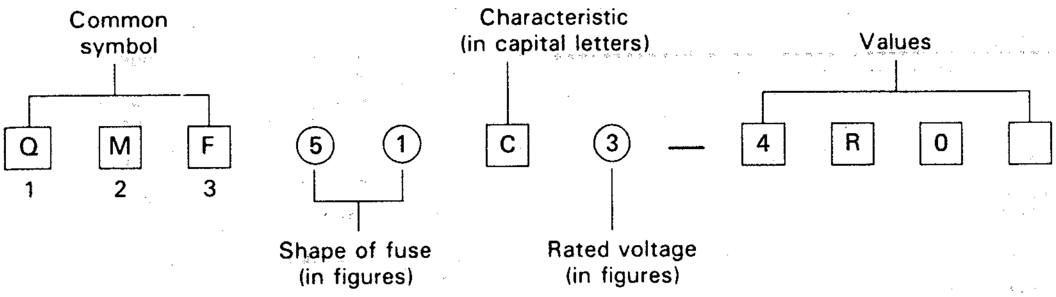
101	10×10^1 pF	100 pF
102	10×10^2 pF	1,000 pF (0.001 μF)
103	10×10^3 pF	10,000 pF (0.01 μF)
104	10×10^4 pF	100,000 pF (0.1 μF)
105	10×10^5 pF	1 μF
5R0		5.0 pF

Assistant code (eleventh digit)

G	Small size
Z	Lead taping
Y	Lead taping

6.1.3 Fuse coding

Standard fuse part numbers are as follows.



Common symbol
Characteristic (in capital letters)
Values
Q
M
F
5
1
C
3
—
4
R
0
1
2
3
Shape of fuse (in figures)
Rated voltage (in figures)

Shape of fuse
(fourth and fifth digits)

51	ϕ5.2 × 20 mm
60	ϕ6.4 × 30 mm
61	ϕ6.35 × 31.8 mm
63	ϕ6.4 × 30 mm with lead wires
66	ϕ6.35 × 31.8 mm with lead wires
00	Special type

Rated voltage
(seventh digit)

1	AC125 V
2	AC250 V
3	0.1 – 1 A : AC250 V 1.25 – 6.3 A : AC125 V

Values
(eighth-tenth or eleventh digits)
example:

R63	0.63 A
1R0	1.0 A
2R5	2.5 A
100	10 A
R315	0.315 A
1R25	1.25 A

Characteristics (sixth digit)

Symbol	Fusing Current	Fusing Time	Remarks
A	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
B	210 %	Within 30 min.	Regular fusible type (for SEMKO, Europe)
	275 %	0.05 – 2 sec.	
	400 %	0.01 – 0.3 sec.	
C	135 %	Within 1 hr.	Regular fusible type (for UL, Japan)
	200 %	Within 2 min.	
E	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
J	135 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
M	135 %	Within 1 hr.	Regular fusible type (for UL)
	200 %	Within 2 min.	
R	160 %	Within 1 hr.	Regular fusible type
	200 %	Within 2 min.	
S	160 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
	700 % – 2000 %	Within 0.01 sec.	
U	135 %	Within 1 hr.	Anti-rush type (for UL)
	200 %	Within 2 min.	
	800 % – 2000 %	Within 0.01 sec.	

6. MAIN BOARD ASSEMBLY <01>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB10015A-01	MAIN BOARD ASSY
	IC1	S-81252HG	IC
	IC2	M5236ML	IC
	IC101	BU3767K	IC
	IC102	M51799FP	IC
	IC103	M51798FP	IC
	IC104	NJM2904E	IC
	IC105	VC5026G	IC
	IC106	AFZ72F45A1	TRAP
	IC301	BA7751AF	IC
	IC302	NJM2904E	IC
	IC401	M50966-150FP	IC
	OR	M50966E-180FP	IC
	IC402	S-8054HN	IC
	IC403	BU4584BF	IC
	IC404	M54543ASL	IC
	Q1	2SB1009(PQ)	TRANSISTOR
	Q3	DTC144EU	TRANSISTOR
	Q4	2SJ146	FE TRANSISTOR
	Q5	2SJ146	FE TRANSISTOR
	Q101	DTA124EU	TRANSISTOR
	Q102	2SC4081	TRANSISTOR
	Q103	2SK665	FE TRANSISTOR
	Q104	2SK665	FE TRANSISTOR
	Q105	DTC144EU	TRANSISTOR
	Q106	DTC144EU	TRANSISTOR
	Q107	DTC144EU	TRANSISTOR
	Q108	DTC144EU	TRANSISTOR
	Q109	DTC144EU	TRANSISTOR
	Q115	DTC144EU	TRANSISTOR
	Q116	DTC144EU	TRANSISTOR
	Q117	DTC144EU	TRANSISTOR
	Q118	DTC144EU	TRANSISTOR
	Q121	2SB798	TRANSISTOR
	Q122	2SB798	TRANSISTOR
	Q123	2SB798	TRANSISTOR
	Q129	DTC144EU	TRANSISTOR
	Q302	DTA124EU	TRANSISTOR
	Q303	FMW3	TRANSISTOR
	Q304	2SC4081(S)	TRANSISTOR
	Q305	2SC4081(S)	TRANSISTOR
	Q306	2SA1036K(QR)	TRANSISTOR
	Q307	2SA1036K(QR)	TRANSISTOR
	Q308	DTC144EU	TRANSISTOR
	Q309	2SK665	FE TRANSISTOR
	Q310	DTC144EU	TRANSISTOR
	Q311	2SC4081(S)	TRANSISTOR
	Q312	FMG2	TRANSISTOR
	Q401	2SA1576	TRANSISTOR
	Q402	2SC4081	TRANSISTOR
	Q403	2SK665	FE TRANSISTOR
	Q404	2SK665	FE TRANSISTOR
	Q405	DTA124EU	TRANSISTOR
	Q406	2SA1576	TRANSISTOR
	Q407	2SA1576	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D2	FMN1	DIODE
	D101	MA141WK	DIODE
	D102	MA141WA	DIODE
	D103	MA143	DIODE
	D105	MA704	DIODE
⚠	D401	DA204U	DIODE
⚠	D402	DAN202U	DIODE
	D403	DAP202U	DIODE
	D406	DAP202K	DIODE
	D411	RD6.8EB1	ZENER DIODE
	D412	1SS133	DIODE
	D413	1SS133	DIODE
	R1	QRSA08J-221YN	RESISTOR
	R3	NRSA63J-822N	RESISTOR
	R4	NVP1301-102N	V RESISTOR ,REG 8V
	R15	NRSA63J-123N	RESISTOR
	R17	NRSA63J-105N	RESISTOR
	R19	NRSA63J-102N	RESISTOR
	R20	NRSA63J-824N	RESISTOR
	R21	NRSA63J-105N	RESISTOR
	R22	NRSA63J-824N	RESISTOR
	R101	YU40174-1-1	V RESISTOR ,TRACKING
	R102	NRSA63J-102N	RESISTOR
	R103	NVP1301-103N	V RESISTOR ,TRACKING PRESET
	R104	NRSA63J-102N	RESISTOR
	R105	NRSA63J-103N	RESISTOR
	R106	NRSA63J-273N	RESISTOR
	R107	NRSA63J-102N	RESISTOR
	R108	NRSA63J-102N	RESISTOR
	R109	NRSA63J-102N	RESISTOR
	R110	NVP1301-474N	V RESISTOR ,PB SW PHASE
	R111	NRSA63J-124N	RESISTOR
	R112	NRSA63J-394N	RESISTOR
	R113	NRSA63J-102N	RESISTOR
	R114	NRSA63J-103N	RESISTOR
	R115	NRSA63J-102N	RESISTOR
	R116	NRSA63J-394N	RESISTOR
	R117	NRSA63J-103N	RESISTOR
	R118	NRSA63J-471N	RESISTOR
	R119	NRSA63J-103N	RESISTOR
	R120	NRSA63J-105N	RESISTOR
	R121	NRSA63J-222N	RESISTOR
	R122	NRSA63J-104N	RESISTOR
	R123	NRSA63J-104N	RESISTOR
	R124	NRSA63J-104N	RESISTOR
	R125	NRSA63J-104N	RESISTOR
	R131	NRSA63J-392N	RESISTOR
	R132	NRSA63J-682N	RESISTOR
	R133	NRSA63J-223N	RESISTOR
	R134	NRSA63J-683N	RESISTOR
	R135	NRSA63J-105N	RESISTOR
	R136	NRSA63J-184N	RESISTOR
	R137	NRSA63J-154N	RESISTOR
	R138	NRSA63J-333N	RESISTOR
	R139	NRSA63J-224N	RESISTOR
	R140	NRSA63J-105N	RESISTOR
	R141	NRSA63J-184N	RESISTOR
	R142	NRSA63J-154N	RESISTOR
	R143	NRSA63J-102N	RESISTOR
	R144	NRSA63J-102N	RESISTOR
	R145	NRSA63J-102N	RESISTOR
	R146	NRSA63J-102N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R151	NRSA63J-561N	RESISTOR
	R152	NRSA63J-332N	RESISTOR
	R153	NRSA63J-332N	RESISTOR
	R154	NRSA63J-332N	RESISTOR
	R155	NRSA63J-332N	RESISTOR
	R156	NRSA63J-104N	RESISTOR
	R157	NRSA63J-394N	RESISTOR
	R159	NRSA63J-104N	RESISTOR
	R160	NRSA63J-473N	RESISTOR
	R163	NRSA63J-333N	RESISTOR
	R164	NRSA63J-102N	RESISTOR
	R165	NRSA63J-102N	RESISTOR
	R166	NRSA63J-102N	RESISTOR
	R167	NRSA63J-102N	RESISTOR
	R168	NRSA63J-103N	RESISTOR
	R169	NRSA63J-0R0A	RESISTOR
	R181	NRSA63J-473N	RESISTOR
	R182	NRSA63J-105N	RESISTOR
	R183	NRSA63J-222N	RESISTOR
	R184	NRSA63J-474N	RESISTOR
	R185	NRSA63J-103N	RESISTOR
	R186	NRSA63J-221N	RESISTOR
	R187	NRSA63J-223N	RESISTOR
	R188	NRSA63J-102N	RESISTOR
	R189	NRSA63J-681N	RESISTOR
	R190	NRSA63J-474N	RESISTOR
	R191	NRSA63J-102N	RESISTOR
	R195	NRSA63J-152N	RESISTOR
	R201	NRSA63J-473N	RESISTOR
	R202	NRSA63J-473N	RESISTOR
	R203	NRSA63J-473N	RESISTOR
	R211	NRSA63J-683N	RESISTOR
	R212	NRSA63J-183N	RESISTOR
	R213	NRSA63J-103N	RESISTOR
	R214	NRSA63J-103N	RESISTOR
	R215	NRSA63J-103N	RESISTOR
	R220	NRSA63J-560N	RESISTOR
	R221	NRSA63J-560N	RESISTOR
	R301	NRSA63J-302N	RESISTOR
	R303	NRSA63J-102N	RESISTOR
	R305	NRSA63J-100N	RESISTOR
	R306	NRSA63J-222N	RESISTOR
	R308	NRSA63J-392N	RESISTOR
	R309	NVP1301-103N	V RESISTOR ,PB LEVEL
	R310	NRSA63J-0R0A	RESISTOR
	R311	NRSA63J-124N	RESISTOR
	R312	NRSA63J-121N	RESISTOR
	R313	NRSA63J-223N	RESISTOR
	R314	NRSA63J-470N	RESISTOR
	R315	NRSA63J-185N	RESISTOR
	R316	NRSA63J-822N	RESISTOR
	R317	NRSA63J-223N	RESISTOR
	R318	NRSA63J-223N	RESISTOR
	R320	NRSA63J-151N	RESISTOR
	R321	NRSA63J-152N	RESISTOR
	R322	NRSA63J-221N	RESISTOR
	R323	NRSA63J-273N	RESISTOR
	R324	NRSA63J-102N	RESISTOR
	R326	NRSA63J-133N	RESISTOR
	R327	NRSA63J-123N	RESISTOR
	R328	NRSA63J-123N	RESISTOR
	R329	NRSA63J-123N	RESISTOR
	R330	NRSA63J-562N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R331	NRSA63J-272N	RESISTOR
	R333	NRSA63J-104N	RESISTOR
	R334	NRSA63J-104N	RESISTOR
	R335	NRSA63J-100N	RESISTOR
	R336	NRSA63J-100N	RESISTOR
	R337	NRSA63J-133N	RESISTOR
	R338	NRSA63J-473N	RESISTOR
	R339	NRSA63J-221N	RESISTOR
	R340	NRSA63J-102N	RESISTOR
	R342	NVP1301-683N	V RESISTOR ,BIAS LEVEL
	R345	NRSA63J-103N	RESISTOR
	R346	NRSA63J-103N	RESISTOR
	R347	NRSA63J-271N	RESISTOR
	R348	QRSA08J-123YN	RESISTOR
	R351	NRVA62D-104N	RESISTOR
	R352	NRVA62D-104N	RESISTOR
	R353	NRVA62D-513N	RESISTOR
	R354	QRSA08J-0R0Y	RESISTOR
	R355	NRVA62D-331N	RESISTOR
	R356	NRVA62D-472N	RESISTOR
	R357	NRVA62D-513N	RESISTOR
	R358	NRVA62D-513N	RESISTOR
	R359	NRVA62D-243N	RESISTOR
	R360	QRSA08J-0R0Y	RESISTOR
	R361	NRVA62D-331N	RESISTOR
	R362	NRVA62D-472N	RESISTOR
	R401	NRSA63J-105N	RESISTOR
	R402	NRSA63J-153N	RESISTOR
	R403	NRSA63J-102N	RESISTOR
	R404	NRSA63J-472N	RESISTOR
	R405	NRSA63J-103N	RESISTOR
	R406	NRSA63J-472N	RESISTOR
	R407	NRSA63J-104N	RESISTOR
	R408	NRSA63J-473N	RESISTOR
	R409	NRSA63J-102N	RESISTOR
	R410	NRSA63J-103N	RESISTOR
	R411	NRSA63J-102N	RESISTOR
	R412	NRSA63J-103N	RESISTOR
	R413	NRSA63J-102N	RESISTOR
	R414	NRSA63J-333N	RESISTOR
	R415	NRSA63J-102N	RESISTOR
	R416	NRSA63J-823N	RESISTOR
	R417	NRSA63J-184N	RESISTOR
	R418	NRSA63J-103N	RESISTOR
	R419	NRSA63J-102N	RESISTOR
	R420	NRSA63J-203N	RESISTOR
	R421	NRSA63J-203N	RESISTOR
	R422	NRSA63J-203N	RESISTOR
	R423	NRSA63J-103N	RESISTOR
	R424	NRSA63J-103N	RESISTOR
	R425	NRSA63J-203N	RESISTOR
	R426	NRSA63J-153N	RESISTOR
	R427	NRSA63J-102N	RESISTOR
	R428	NRSA63J-105N	RESISTOR
	R429	NRSA63J-102N	RESISTOR
	R430	NRSA63J-563N	RESISTOR
	R431	NRSA63J-472N	RESISTOR
	R432	NRSA63J-203N	RESISTOR
	R433	NRSA63J-203N	RESISTOR
	R434	NRSA63J-203N	RESISTOR
	R435	NRSA63J-103N	RESISTOR
	R436	NRSA63J-103N	RESISTOR
	R437	NRSA63J-203N	RESISTOR
	R438	NRSA63J-102N	RESISTOR
	R439	NRSA63J-102N	RESISTOR
	R440	NRVA62D-823N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R441	NRSA63J-165N	RESISTOR
	R442	NRVA62D-683N	RESISTOR
	R444	NRSA63J-153N	RESISTOR
	R445	NRSA63J-102N	RESISTOR
	R446	NRSA63J-153N	RESISTOR
	R447	NRSA63J-102N	RESISTOR
	R448	NRSA63J-104N	RESISTOR
	R449	NRSA63J-0R0A	RESISTOR
	R450	NRSA63J-103N	RESISTOR
	R451	NRSA63J-471N	RESISTOR
	R452	NRSA63J-153N	RESISTOR
	R453	NRSA63J-102N	RESISTOR
	R454	NRSA63J-153N	RESISTOR
	R455	NRSA63J-102N	RESISTOR
	R456	NRSA63J-102N	RESISTOR
	R457	NRSA63J-473N	RESISTOR
	R458	NRSA63J-273N	RESISTOR
	R460	NRSA63J-0R0A	RESISTOR
	R461	NRSA63J-102N	RESISTOR
	R462	NRSA63J-102N	RESISTOR
	R463	NRSA63J-102N	RESISTOR
	R464	NRSA63J-271N	RESISTOR
	R465	NRSA63J-332N	RESISTOR
	R466	NRSA63J-152N	RESISTOR
	R467	NRSA63J-103N	RESISTOR
	R468	NRSA63J-473N	RESISTOR
	R469	NRSA63J-473N	RESISTOR
	R470	NRSA63J-104N	RESISTOR
	R471	NRSA63J-103N	RESISTOR
	R472	NRSA63J-103N	RESISTOR
•	R473	NRSA63J-153N	RESISTOR
	R474	NRSA63J-473N	RESISTOR
	R475	NRSA63J-473N	RESISTOR
	R476	NRSA63J-105N	RESISTOR
	R477	NRSA63J-102N	RESISTOR
	R478	NRSA63J-472N	RESISTOR
	R479	NRSA63J-103N	RESISTOR
	R480	NRSA63J-105N	RESISTOR
	R489	NRSA63J-105N	RESISTOR
	R490	NRSA63J-102N	RESISTOR
	B101	NRSA63J-0R0A	RESISTOR
	B103	NRSA63J-0R0A	RESISTOR
	B105	NRSA63J-0R0A	RESISTOR
	B301	NRSA63J-0R0A	RESISTOR
	C1	QEKA1CM-476	E CAPACITOR
	C2	QEKA1CM-476	E CAPACITOR
	C3	QED41CM-476	E CAPACITOR
	C4	QED41CM-476	E CAPACITOR
	C5	QED41AM-826	E CAPACITOR
	C6	QED41AM-826	E CAPACITOR
	C7	QED41AM-826	E CAPACITOR
	C8	QCY81EK-473	CAPACITOR
	C9	QED41AM-826	E CAPACITOR
	C10	QCFA1EZ-104	CAPACITOR
	C15	QEF81EM-474	TANTAL CAPACITOR
	C16	QEE81DM-226	TANTAL CAPACITOR
	C101	QFZ0095-473T	M CAPACITOR
	C102	QCYA1HK-392	CAPACITOR
	C103	NCT06CH-270A	CAPACITOR
	C104	NCT06CH-270A	CAPACITOR
	C106	QER41CM-476ZE	E CAPACITOR
	C107	PU59758-105	CAPACITOR
	C108	QCYA1HK-103	CAPACITOR
	C109	QCYA1HK-562	CAPACITOR
	C110	QCYA1HK-103	CAPACITOR
	C111	QCSA1HJ-102	CAPACITOR
	C112	QEPA1CM-106ZE	E CAPACITOR
	C113	QEPA1CM-106ZE	E CAPACITOR
	C114	QCY81HK-103ZLM	CAPACITOR
	C115	QCY81HK-103ZLM	CAPACITOR
	C116	NCB31EK-103A	CAPACITOR
	C121	QCYA1HK-222	CAPACITOR
	C122	QFZ0096-224T	MM CAPACITOR
	C123	QCYA1HK-222	CAPACITOR
	C124	QFZ0095-104T	MM CAPACITOR
	C125	QER41CM-106ZE	E CAPACITOR
	C126	QCYA1EK-223	CAPACITOR
	C127	QCYA1HK-332	CAPACITOR
	C128	QCYA1EK-223	CAPACITOR
	C129	QCYA1EK-223	CAPACITOR
	C130	QCYA1EK-223	CAPACITOR
	C141	NCF31CZ-104A	CAPACITOR
	C142	NCB31HK-471A	CAPACITOR
	C143	NCS31HJ-100A	CAPACITOR
	C144	NCB31EK-103A	CAPACITOR
	C145	QER41CM-106ZE	E CAPACITOR
	C146	PU59758-105	CAPACITOR
	C147	QER41HM-105ZE	E CAPACITOR
	C148	QER40JM-476ZE	E CAPACITOR
	C149	NCB31HK-102A	CAPACITOR
	C150	QER41CM-106ZE	E CAPACITOR
	C151	QCFA1EZ-104	CAPACITOR
	C152	QER40JM-107ZE	E CAPACITOR
	C161	NCB31EK-103A	CAPACITOR
	C162	NCB31EK-103A	CAPACITOR
	C163	NCB31EK-103A	CAPACITOR
	C164	NCB31EK-103A	CAPACITOR
	C165	NCB31EK-103A	CAPACITOR
	C166	QER41AM-336ZE	E CAPACITOR
	C167	QER41AM-336ZE	E CAPACITOR
	C168	QER41AM-336ZE	E CAPACITOR
	C301	QER41HM-224ZE	E CAPACITOR
	C303	QER41CM-106ZE	E CAPACITOR
	C306	QER40JM-336ZE	E CAPACITOR
	C307	QER41AM-226ZE	E CAPACITOR
	C308	QCYA1EK-223	CAPACITOR
	C309	NCB31HK-681A	CAPACITOR
	C310	NCB31HK-272A	CAPACITOR
	C311	QER41HM-474ZE	E CAPACITOR
	C312	QER40JM-336ZE	E CAPACITOR
	C313	QEPA0JM-226	NP E CAPACITOR
	C314	QER41HM-105ZE	E CAPACITOR
	C315	QER41CM-106ZE	E CAPACITOR
	C316	QER41CM-106ZE	E CAPACITOR
	C317	QCF81EZ-224	CAPACITOR
	C318	QER40JM-226ZE	E CAPACITOR
	C319	QFJ41HJ-273T	M CAPACITOR
	C320	QER41HM-474ZE	E CAPACITOR
	C321	QER40JM-226ZE	E CAPACITOR
	C322	NCB31HK-471A	CAPACITOR
	C323	NCB31HK-222A	CAPACITOR
	C324	NCB31HK-222A	CAPACITOR
	C325	QFZ9011-473T	MM CAPACITOR
	C326	QER41AM-476ZE	E CAPACITOR
	C327	QER41CM-106ZE	E CAPACITOR
	C330	NCB31HK-472A	CAPACITOR
	C331	NCB31HK-182A	CAPACITOR
	C332	NCB31HK-472A	CAPACITOR
	C334	NCB31HK-682A	CAPACITOR
	C335	QEKA0JM-107	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C336	NCB31HK-682A	CAPACITOR
	C341	NCT08CH-101A	CAPACITOR
	C342	NCT08CH-101A	CAPACITOR
	C343	NCT08CH-101A	CAPACITOR
	C344	NCT08CH-101A	CAPACITOR
	C345	NCT08CH-101A	CAPACITOR
	C346	NCT08CH-101A	CAPACITOR
	C347	NCT08CH-101A	CAPACITOR
	C348	NCT08CH-101A	CAPACITOR
	C401	QER41EM-475ZE	E CAPACITOR
	C402	QCFA1EZ-104	CAPACITOR
	C403	QER41EM-475ZE	E CAPACITOR
	C404	NCS31HJ-330A	CAPACITOR
	C405	NCS31HJ-330A	CAPACITOR
	C406	QCFA1EZ-473	CAPACITOR
	C407	NCB31HK-332A	CAPACITOR
	C408	NCB31HK-472A	CAPACITOR
	C409	QCFA1EZ-333	CAPACITOR
	C411	NCB31EK-103A	CAPACITOR
	C412	QEF81AM-106	TANTAL CAPACITOR
	C414	QCYA1HK-103	CAPACITOR
	L1	PU56181-470	CHOKE COIL
	L2	PU56181-470	CHOKE COIL
	L302	PU56197-2	EQUALIZER
⚠	L303	YU40209	OSC COIL
	L304	PU59188-221K	COIL
	L305	YU40249-101K	COIL
	L401	YU40248-470K	COIL
⚠	CF401	YU40560	CRYSTAL RESONATOR
⚠	X1	PU58331	CRYSTAL RESONATOR
⚠	OR	PU58849	CRYSTAL RESONATOR
	DD1	YU40169-01-03	DC-DC CONVERTER
	CL1	YU40245-02	WIRE CLAMP , X4
	HS1	YU40466-1-3	HEAT SINK
	SCW1	YQ40578	SCREW
	SLD1	YU40467	INSULATOR
	SLD2	YQ40890	SHEET
	TP1	YU40581	CHIP TP
	TP2	YU40581	CHIP TP
	TP3	PU56278	TEST PIN
	TP4	YU40581	CHIP TP
	TP5	PU54983	TEST PIN
	TP6	PU54983	TEST PIN
	TP101	PU56278	TEST PIN
	TP102	PU56278	TEST PIN
	TP103	PU56278	TEST PIN
	TP104	YU40581	CHIP TP
	TP105	PU56278	TEST PIN
	TP106	PU56278	TEST PIN
	TP107	PU56278	TEST PIN
	TP108	PU56278	TEST PIN
	TP110	PU56278	TEST PIN
	TP111	PU56278	TEST PIN
	TP302	YU40581	CHIP TP
	TP303	PU56278	TEST PIN
	TP304	PU56278	TEST PIN
	TP401	YU40581	CHIP TP

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	CN1	YU40101-12	CAP HOUSING,(BOARD TO BOARD)
	CN2	YU40108-6	FPC HOUSING
	CN3	YU40096-3	CAP HOUSING
	CN4	YU40096-2	CAP HOUSING
	CN5	YU40104-14	CAP HOUSING,(BOARD TO BOARD)
	CN6	YU40106-12	FPC HOUSING
	CN7	YU40106-10	FPC HOUSING
	CN8	YU40096-7	CAP HOUSING
	CN9	YU40096-6	CAP HOUSING
	CN10	YU40096-7	CAP HOUSING
	CN11	YU40096-3Y	CAP HOUSING
	CN12	YU40096-3	CAP HOUSING
	CN13	YU40096-9	CAP HOUSING
	CN14	YU40108-15	FPC HOUSING
	CN15	YU40102-10	CAP HOUSING,(BOARD TO BOARD)
	CN16	YU40102-10	CAP HOUSING,(BOARD TO BOARD)
	CN17	YU40102-10	CAP HOUSING,(BOARD TO BOARD)
⚠	CP1	ICP-F15	CIRCUIT PROTECTOR
⚠	CP2	ICP-F15	CIRCUIT PROTECTOR
⚠	CP3	ICP-F15	CIRCUIT PROTECTOR
⚠	CP4	ICP-F15	CIRCUIT PROTECTOR
⚠	CP5	ICP-F20	CIRCUIT PROTECTOR

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* 7. Y/C BOARD ASSEMBLY <02> *

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	PWBA	YB10017A-02-C2	Y/C BOARD ASSY
	IC1	BA7288K	IC
	IC2	MSM6964-3MS	IC
	IC3	LA7316	IC
	IC4	AN8009	IC
	Q1	2SC4081	TRANSISTOR
	Q2	2SC4081	TRANSISTOR
	Q4	2SA1576	TRANSISTOR
	Q5	2SC4081	TRANSISTOR
	Q6	2SC4081	TRANSISTOR
	Q7	DTC144EU	TRANSISTOR
	Q11	2SC4081	TRANSISTOR
	Q12	2SA1576	TRANSISTOR
	Q13	DTC144EU	TRANSISTOR
	Q14	2SA1576	TRANSISTOR
	Q15	2SC4081	TRANSISTOR
	Q20	2SA1577	TRANSISTOR
	Q21	2SA1577	TRANSISTOR
	Q22	2SA1577	TRANSISTOR
	Q23	2SB624-T2BBV4	TRANSISTOR
	Q24	DTC144EU	TRANSISTOR
	Q25	DTA144EU	TRANSISTOR
	Q26	2SK665	FE TRANSISTOR
	Q27	2SK665	FE TRANSISTOR
	Q28	DTC144EU	TRANSISTOR
	Q30	2SC4081	TRANSISTOR
	D1	DAN202U	DIODE
	D2	DAN202U	DIODE
	D3	DAN202U	DIODE
	D4	DAN202U	DIODE
	D5	DAN202U	DIODE
	D6	DAN202U	DIODE
	D7	DAN202U	DIODE
	D9	DAN202U	DIODE
	D10	DA204U	DIODE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D11	DA204U	DIODE
	R1	NRSA63J-822N	RESISTOR
	R2	NRSA63J-822N	RESISTOR
	R3	NRSA63J-821N	RESISTOR
	R4	NRSA63J-102N	RESISTOR
	R5	NRSA63J-122N	RESISTOR
	R6	NRSA63J-821N	RESISTOR
	R7	NRSA63J-122N	RESISTOR
	R8	NRSA63J-681N	RESISTOR
	R9	NRSA63J-331N	RESISTOR
	R10	NRSA63J-102N	RESISTOR
	R13	NRSA63J-102N	RESISTOR
	R14	NRSA63J-222N	RESISTOR
	R15	NRSA63J-222N	RESISTOR
	R16	NRSA63J-391N	RESISTOR
	R17	NRSA63J-152N	RESISTOR
	R18	NRSA63J-391N	RESISTOR
	R19	NRSA63J-562N	RESISTOR
	R20	NRSA63J-122N	RESISTOR
	R21	NRSA63J-122N	RESISTOR
	R22	NRSA63J-681N	RESISTOR
	R23	NRSA63J-561N	RESISTOR
	R24	NRSA63J-152N	RESISTOR
	R25	NRSA63J-821N	RESISTOR
	R26	NRSA63J-0R0A	RESISTOR
	R34	NRSA63J-472N	RESISTOR
	R35	NRSA63J-102N	RESISTOR
	R36	NRSA63J-333N	RESISTOR
	R37	NRSA63J-153N	RESISTOR
	R38	NRSA63J-102N	RESISTOR
	R39	NRSA63J-152N	RESISTOR
	R40	NRSA63J-272N	RESISTOR
	R41	NRSA63J-681N	RESISTOR
	R42	NRSA63J-203N	RESISTOR
	R43	NRSA63J-103N	RESISTOR
	R44	NRSA63J-152N	RESISTOR
	R45	NRSA63J-222N	RESISTOR
	R46	NRSA63J-182N	RESISTOR
	R47	NRSA63J-123N	RESISTOR
	R48	NRSA63J-153N	RESISTOR
	R49	NRSA63J-273N	RESISTOR
	R50	NRSA63J-103N	RESISTOR
	R51	NRSA63J-222N	RESISTOR
	R52	NRSA63J-102N	RESISTOR
	R53	NRSA63J-563N	RESISTOR
	R54	QRSA08J-152YN	RESISTOR
	R55	NRSA63J-102N	RESISTOR
	R56	NRSA63J-102N	RESISTOR
	R57	NRSA63J-104N	RESISTOR
	R58	NRSA63J-122N	RESISTOR
	R59	NRSA63J-561N	RESISTOR
	R60	NRSA63J-824N	RESISTOR
	R61	NRSA63J-0R0A	RESISTOR
	R62	NRSA63J-273N	RESISTOR
	R64	NRSA63J-122N	RESISTOR
	R65	NRSA63J-102N	RESISTOR
	R66	NRSA63J-102N	RESISTOR
	R67	NRSA63J-561N	RESISTOR
	R70	NRSA63J-271N	RESISTOR
	R71	NRSA63J-102N	RESISTOR
	R72	NRSA63J-102N	RESISTOR
	R73	NRSA63J-151N	RESISTOR
	R74	NRSA63J-332N	RESISTOR
	R75	NRSA63J-151N	RESISTOR
	R76	NRSA63J-102N	RESISTOR
	R77	NRSA63J-122N	RESISTOR
	R81	NRSA63J-223N	RESISTOR
	R82	NRSA63J-822N	RESISTOR
	R84	NRSA63J-472N	RESISTOR
	R85	NRSA63J-104N	RESISTOR
	R88	NRSA63J-681N	RESISTOR
	R90	NRSA63J-152N	RESISTOR
	R91	NRSA63J-332N	RESISTOR
	R92	NRSA63J-152N	RESISTOR
	R93	NRSA63J-332N	RESISTOR
	R94	NRSA63J-152N	RESISTOR
	R95	NRSA63J-332N	RESISTOR
	R96	NRSA63J-333N	RESISTOR
	R97	NRSA63J-123N	RESISTOR
	R98	NRSA63J-562N	RESISTOR
	R99	NRSA63J-222N	RESISTOR
	R100	NRSA63J-272N	RESISTOR
	R101	NRSA63J-561N	RESISTOR
	R103	NRSA63J-103N	RESISTOR
	R104	NRSA63J-103N	RESISTOR
	R105	NRSA63J-472N	RESISTOR
	R151	NVP1301-222N	V RESISTOR ,REC FM LEVEL
	R152	NVP1301-681N	V RESISTOR ,PB EQ
	R153	NVP1301-331N	V RESISTOR ,REC COLOR LEVEL
	R154	NVP1301-102N	V RESISTOR ,PB BURST LEVEL
	R155	PU57567-1	V RESISTOR ,DEVIATION
	R156	PU57567-11	V RESISTOR ,CARRIER
	R157	PU57567-21	V RESISTOR ,WHITE CLIP LEVEL
	R158	PU57567-4	V RESISTOR ,DARK CLIP LEVEL
	R159	PU57567-10	V RESISTOR ,PB Y LEVEL
	R161	PU57567-1	V RESISTOR ,EE Y LEVEL
	R162	PU57567-18	V RESISTOR ,PB 1HDL Y LEVEL
	R163	NVP1301-102N	V RESISTOR ,PB COLOR LEVEL
	R164	PU57567-1	V RESISTOR ,EE BURST LEVEL
	B1	NRSA63J-0R0A	RESISTOR
	B2	NRSA63J-0R0A	RESISTOR
	B3	NRSA63J-0R0A	RESISTOR
	C1	NCB31EK-103A	CAPACITOR
	C2	NCS31HJ-470A	CAPACITOR
	C3	NCS31HJ-220A	CAPACITOR
	C4	NCB31EK-103A	CAPACITOR
	C5	NCS31HJ-330A	CAPACITOR
	C6	NCS31HJ-221A	CAPACITOR
	C7	NCS31HJ-121A	CAPACITOR
	C8	QCYA1EK-223	CAPACITOR
	C9	QER61CM-476GZ	E CAPACITOR
	C12	NCB31EK-103A	CAPACITOR
	C13	NCS31HJ-151A	CAPACITOR
	C14	NCS31HJ-330A	CAPACITOR
	C15	NCB31EK-103A	CAPACITOR
	C16	NCS31HJ-101A	CAPACITOR
	C17	NCS31HJ-560A	CAPACITOR
	C18	NCS31HJ-181A	CAPACITOR
	C19	NCS31HJ-220A	CAPACITOR
	C20	NCS31HJ-120A	CAPACITOR
	C21	QCYA1EK-223	CAPACITOR
	C22	QER61CM-476GZ	E CAPACITOR
	C25	NCB31EK-103A	CAPACITOR
	C26	NCB31EK-103A	CAPACITOR
	C27	NCS31HJ-470A	CAPACITOR
	C28	NCS31HJ-330A	CAPACITOR
	C29	NCS31HJ-470A	CAPACITOR
	C31	QCSA1HJ-391	CAPACITOR
	C32	NCB31EK-103A	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C33	NCB31EK-103A	CAPACITOR
	C34	NCB31EK-103A	CAPACITOR
	C36	NCS31HJ-101A	CAPACITOR
	C37	NCS31HJ-221A	CAPACITOR
	C38	NCB31EK-103A	CAPACITOR
	C39	QER61HM-224GZ	E CAPACITOR
	C40	NCB31EK-103A	CAPACITOR
	C41	QCYA1HK-332	CAPACITOR
	C42	QCYA1EK-223	CAPACITOR
	C43	QCYA1EK-223	CAPACITOR
	C44	QER61CM-476GZ	E CAPACITOR
	C45	QER61HM-105GZ	E CAPACITOR
	C46	QER61EM-335GZ	E CAPACITOR
	C47	QER61CM-475GZ	E CAPACITOR
	C48	QER61EM-335GZ	E CAPACITOR
	C49	QER61CM-106GZ	E CAPACITOR
	C50	QER61CM-106GZ	E CAPACITOR
	C51	QER61CM-106GZ	E CAPACITOR
	C54	QCYA1EK-223	CAPACITOR
	C55	QCYA1EK-223	CAPACITOR
	C56	QER61HM-105GZ	E CAPACITOR
	C57	QER61CM-475GZ	E CAPACITOR
	C58	QEE41CM-476	E CAPACITOR
	OR	QEE81CM-476	T.CAP
	OR	QEJ41CM-476	T.CAP
	C59	QER61CM-476GZ	E CAPACITOR
	C60	NCB31EK-103A	CAPACITOR
	C61	NCB31EK-103A	CAPACITOR
	C65	NCB31EK-103A	CAPACITOR
	C66	NCR21CK-473A	CAPACITOR
	C67	NCB31EK-103A	CAPACITOR
	C68	NCS31HJ-101A	CAPACITOR
	C69	QCYA1HK-333	CAPACITOR
	C70	QCYA1HK-333	CAPACITOR
	C71	QCYA1HK-153	CAPACITOR
	C72	NCS31HJ-820A	CAPACITOR
	C73	NCS31HJ-100A	CAPACITOR
	C74	NCS31HJ-820A	CAPACITOR
	C75	NCB31HK-272A	CAPACITOR
	C76	NCS31HJ-151A	CAPACITOR
	C77	NCS31HJ-150A	CAPACITOR
	C78	NCS31HJ-151A	CAPACITOR
	C79	QCYA1EK-223	CAPACITOR
	C80	NCR21CK-473A	CAPACITOR
	C81	NCS31HJ-6R0A	CAPACITOR
	C82	NCS31HJ-101A	CAPACITOR
	C83	NCS31HJ-121A	CAPACITOR
	C85	NCB31EK-103A	CAPACITOR
	C86	NCS31HJ-101A	CAPACITOR
	C87	NCS31HJ-221A	CAPACITOR
	C88	NCS31HJ-3R0A	CAPACITOR
	C89	QCYA1EK-223	CAPACITOR
	C90	NCS31HJ-101A	CAPACITOR
	C92	NCS31HJ-220A	CAPACITOR
	C93	QER61HM-105GZ	E CAPACITOR
	C94	QER61HM-105GZ	E CAPACITOR
	C95	QER61HM-105GZ	E CAPACITOR
	C96	QER61HM-105GZ	E CAPACITOR
	C97	QEE81AM-476	E CAPACITOR
	C100	QCFA1EZ-104	CAPACITOR
	C101	QEK61AM-107	E CAPACITOR
	C102	QER61CM-106GZ	E CAPACITOR
	C104	QEKC0HM-477	E CAPACITOR
	C105	NCB31EK-103A	CAPACITOR
	L1	PU59152-121J	PEAKING COIL
	L2	PU59152-390J	PEAKING COIL

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	L3	PU59152-220J	PEAKING COIL
	L4	YU40589-271K	PEAKING COIL
	L5	PU59152-680J	PEAKING COIL
	L6	YU40589-470J	PEAKING COIL
	L8	PU59152-680J	PEAKING COIL
	L9	PU59152-560J	PEAKING COIL
	L10	PU59152-100J	PEAKING COIL
	L11	PU59152-180J	PEAKING COIL
	L12	YU40589-331K	PEAKING COIL
	L13	YU40589-470J	PEAKING COIL
	L14	PU59152-220J	PEAKING COIL
	L16	PU59152-100J	PEAKING COIL
	L17	PU59152-560J	PEAKING COIL
	L18	PU59152-121J	PEAKING COIL
	L19	YU40589-470J	PEAKING COIL
	L21	YU40589-470J	PEAKING COIL
	L22	YU40589-470J	PEAKING COIL
	L25	YU40589-102K	PEAKING COIL
	L26	YU40589-331K	PEAKING COIL
	L27	PU53607-682	COIL
	L28	YU40589-271K	PEAKING COIL
	L29	PU59152-470J	PEAKING COIL
	L30	PU59152-181J	PEAKING COIL
	L32	PU59152-390J	PEAKING COIL
	L33	PU59152-2R2J	PEAKING COIL
	L34	YU40589-470J	PEAKING COIL
	L35	PU59152-470J	PEAKING COIL
	L37	YU40589-470J	PEAKING COIL
	EQ1	YU40582	EQUALIZER
	LPF1	YU40583	LOW PASS FILTER
	LPF2	YU40906	LOW PASS FILTER,(CCD OUT)
	OR	YU40584	LOW PASS FILTER,(CCD OUT)
	BPF1	YU40585	3.58MH B.P.F
	BPF2	YU40586	BAND PASS FILTER,(4.21MH)
	DL1	YU40243-2	COMB FILTER
⚠	X1	YU40644	CRYSTAL RESONATOR
	CL1	YU40245-04	WIRE CLAMP
	TP1	YU40581	CHIP TP
	TP2	YU40581	CHIP TP
	TP3	YU40581	CHIP TP
	TP4	YU40581	CHIP TP
	TP6	YU40581	CHIP TP
	TP7	YU40581	CHIP TP
	TP8	YU40581	CHIP TP
	TP9	PU56278	TEST PIN
	TP10	YU40581	CHIP TP
	TP11	PU56278	TEST PIN
	TP12	PU56278	TEST PIN
	TP13	YU40581	CHIP TP
	CN5	YU40105-10	CAP HOUSING,(BOARD TO BOARD)
	CN6	YU40105-10	CAP HOUSING,(BOARD TO BOARD)
	CN7	YU40105-10	CAP HOUSING,(BOAD TO BOARD)
	CN8	YU40096-4	CAP HOUSING
	CN9	YU40642-16	HINGE HOUSING

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8. DRUM MDA BOARD ASSEMBLY <03>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20068A-01	DRUM MDA BOARD ASSY
	IC251	BA6452F	IC
	D251	MA141WK	DIODE
	R251	QRSA08J-102YN	RESISTOR
	R252	QRSA08J-104YN	RESISTOR
	R253	QRSA08J-153YN	RESISTOR
	R254	QRSA08J-222YN	RESISTOR
	R255	QRSA08J-121YN	RESISTOR
	R256	QRSA08K-2R2YN	RESISTOR
	R257	QRSA08K-2R2YN	RESISTOR
	R258	QRSA08K-2R2YN	RESISTOR
	R259	QRG12BJ-R68AR	OMF RESISTOR
	R260	QRSA08J-104YN	RESISTOR
	R261	QRSA08J-0R0Y	RESISTOR
	C251	QCY81EK-104	CAPACITOR
	C252	QCSA1HJ-471	CAPACITOR
	C253	QCY81CK-224	CAPACITOR
	C254	QCFA1EZ-104	CAPACITOR
	C255	QER41CM-106ZE	E CAPACITOR
	C256	QCYA1EK-223	CAPACITOR
	C257	QER41CM-106ZE	E CAPACITOR
	C258	QER41CM-106ZE	E CAPACITOR
	C259	QER41CM-106ZE	E CAPACITOR
	C260	QCY81EK-104	CAPACITOR
	C261	QER41CM-106ZE	E CAPACITOR
	SW251	YU40177	CASSETTE LOCK SWITCH
	CN251	YU40105-14	CAP HOUSING,(BOARD TO BOARD)
	CN252	YU40107-15	FPC HOUSING
	CN253	YU40095-2Y	CAP HOUSING
	CN254	YU40096-2	CAP HOUSING

9. PRE/REC AMP BOARD ASSEMBLY <04>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	BW7614	PRE/REC AMP MODULE

10. MIC JACK BOARD ASSEMBLY <05>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20079A1	MIC JACK BOARD ASSY
	R1	NRD187J-100N	MLF RESISTOR
	J1	PU59711	MIC JACK
	CN1	YU40096-3	HOUSING
	CN2	YU40095-2	HOUSING

11. JACK BOARD ASSEMBLY <06>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20079A2	JACK BOARD ASSY
	D3	RLZ8.2B	ZENER DIODE
	R1	NRD187J-221N	MLF RESISTOR
	R2	NRD187J-102N	MLF RESISTOR
	R3	NRD187J-221N	MLF RESISTOR
	R6	NRD187J-750N	MLF RESISTOR
	J1	YU40273-2	JACK BOX(B)
	WR1	YU40206-308	FLAT WIRE1
	WR2	YU40206-306	FLAT WIRE2

12. TRIGGER BOARD ASSEMBLY <07>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20079A3	TRIG BOARD ASSY
	D1	ERA81-004	DIODE
	R1	QRD161J-683	RESISTOR
	S1	PU59843	TACT SWITCH
	S2	YU40969	SLIDE SWITCH
	SPC1	YQ40478	SPACER
	CN1	YU40096-3	HOUSING
	CN2	YU40096-4	HOUSING
	CN3	YU40096-2	HOUSING
⚠	F1	YU40891-3R15	MICRO FUSE
⚠		OR PU60479-3R15	MICRO FUSE

13. SENSOR ASSEMBLY <08>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YS40012E	SENSOR BOARD ASSY
	PWB	YU40199-01-02	SENSOR BOARD
	SW1	YU40176	CASSETTE SWITCH
	PS1	YU40186	REEL SENSOR, X 2

14. VIDEO-1 BOARD ASSEMBLY <21>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20072B-01-C	VIDEO-1 BOARD ASSY

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	IC2	UPD9319GC	IC
	IC3	UPD6147G	IC
	OR	TC9229F	IC
	IC4	UPD6148GS	IC
	IC5	H8D7091B	IC
	IC6	UPC2370GH	IC
	OR	UPC2373GH	IC
	IC7	UPC2371GH	IC
	IC8	MSM6830	IC
	OR	MSM6830-X2	IC
	OR	MSM6830	IC
	Q1	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q2	2SD1819(RS)	TRANSISTOR
	Q3	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q4	2SB1218(RS)	TRANSISTOR
	Q5	2SD1819(RS)	TRANSISTOR
	Q6	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q7	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q8	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q9	2SC4181	TRANSISTOR
	Q10	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q11	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q12	2SC4181	TRANSISTOR
	Q20	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q21	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q22	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q23	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q24	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q25	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q26	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q28	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q29	2SC3931(CD)	TRANSISTOR
	Q30	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q31	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q32	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q33	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q34	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q35	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q36	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	D1	MA143	DIODE
	D2	MA141WA	DIODE
	R1	NRSA63J-105N	RESISTOR
	R2	NRSA63J-102N	RESISTOR
	R3	NRSA63J-151N	RESISTOR
	R4	NRSA63J-151N	RESISTOR
	R5	NRSA63J-0R0A	RESISTOR
	R6	NRSA63J-331N	RESISTOR
	R7	NRSA63J-270N	RESISTOR
	R8	NRSA63J-270N	RESISTOR
	R9	NRSA63J-121N	RESISTOR
	R10	NRSA63J-512N	RESISTOR
	R11	NRSA63J-203N	RESISTOR
	R12	NRSA63J-102N	RESISTOR
	R13	NRSA63J-393N	RESISTOR
	R14	NRSA63J-102N	RESISTOR
	R15	NRSA63J-683N	RESISTOR
	R16	NVP1301-104N	V RESISTOR ,BLOOMING
	R17	NRSA63J-183N	RESISTOR
	R18	NRSA63J-184N	RESISTOR
	R19	NRSA63J-104N	RESISTOR
	R20	NRSA63J-912N	RESISTOR
	R21	NRSA63J-472N	RESISTOR
	R22	NRSA63J-303N	RESISTOR
	R23	NRSA63J-303N	RESISTOR
	R24	NRSA63J-332N	RESISTOR
	R25	NRSA63J-220N	RESISTOR
	R26	NRSA63J-104N	RESISTOR
	R27	NRSA63J-332N	RESISTOR
	R28	QRD161J-100	RESISTOR
	R30	NRSA63J-182N	RESISTOR
	R31	NRSA63J-332N	RESISTOR
	R32	NRSA63J-222N	RESISTOR
	R33	NRSA63J-221N	RESISTOR
	R34	NRSA63J-331N	RESISTOR
	R35	NRSA63J-221N	RESISTOR
	R36	NRSA63J-681N	RESISTOR
	R37	NRSA63J-681N	RESISTOR
	R38	NRSA63J-560N	RESISTOR
	R39	NRSA63J-680N	RESISTOR
	R40	NRSA63J-681N	RESISTOR
	R41	NRSA63J-102N	RESISTOR
	R42	NRSA63J-182N	RESISTOR
	R43	NRSA63J-100N	RESISTOR
	R44	NRSA63J-272N	RESISTOR
	R46	NRSA63J-0R0A	RESISTOR
	R48	NRSA63J-0R0A	RESISTOR
	R50	NRSA63J-102N	RESISTOR
	R51	NRSA63J-102N	RESISTOR
	R52	NRSA63J-102N	RESISTOR
	R53	NRSA63J-332N	RESISTOR
	R54	NVP1301-223N	V RESISTOR ,AGC
	R55	NRSA63J-473N	RESISTOR
	R56	NRSA63J-103N	RESISTOR
	R57	NRSA63J-333N	RESISTOR
	R58	NRSA63J-153N	RESISTOR
	R59	NRSA63J-473N	RESISTOR
	R60	NRSA63J-563N	RESISTOR
	R61	NRSA63J-102N	RESISTOR
	R62	NVP1301-103N	V RESISTOR ,B SEP
	R63	NVP1301-103N	V RESISTOR ,R SEP
	R64	NRSA63J-102N	RESISTOR
	R65	NVP1301-103N	V RESISTOR ,R GAIN
	R66	NVP1301-103N	V RESISTOR ,B GAIN
	R67	NRSA63J-332N	RESISTOR
	R68	NRSA63J-562N	RESISTOR
	R69	NRSA63J-102N	RESISTOR
	R70	NRSA63G-103N	RESISTOR
	R71	NRSA63G-103N	RESISTOR
	R72	NRSA63J-682N	RESISTOR
	R73	NRSA63J-103N	RESISTOR
	R74	NRSA63J-102N	RESISTOR
	R75	NVP1301-103N	V RESISTOR ,R SET UP

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R76	NVP1301-103N	V RESISTOR ,B SET UP
	R77	NRSA63J-102N	RESISTOR
	R78	NRSA63J-273N	RESISTOR
	R79	NRSA63J-393N	RESISTOR
	R80	NRSA63J-183N	RESISTOR
	R81	NRSA63J-243N	RESISTOR
	R82	NRSA63J-821N	RESISTOR
	R83	NRSA63J-122N	RESISTOR
	R84	NRSA63J-332N	RESISTOR
	R85	NRSA63J-102N	RESISTOR
	R86	NRSA63J-102N	RESISTOR
	R87	NRSA63J-102N	RESISTOR
	R88	NRSA63J-102N	RESISTOR
	R89	NRSA63J-562N	RESISTOR
	R94	NRSA63J-102N	RESISTOR
	R95	NRSA63J-102N	RESISTOR
	R96	NRSA63J-102N	RESISTOR
	R97	NRSA63J-562N	RESISTOR
	R98	NRSA63J-222N	RESISTOR
	R99	NRSA63J-683N	RESISTOR
	R100	NRSA63J-681N	RESISTOR
	R101	NRSA63J-331N	RESISTOR
	R102	NRSA63J-331N	RESISTOR
	R103	NRSA63J-182N	RESISTOR
	R104	NRSA63J-391N	RESISTOR
	R105	NRSA63J-102N	RESISTOR
	R106	NRSA63J-271N	RESISTOR
	R107	NRSA63J-751N	RESISTOR
	R108	NRSA63J-222N	RESISTOR
	R109	NRSA63J-122N	RESISTOR
	R110	NRSA63J-472N	RESISTOR
	R111	NRSA63J-102N	RESISTOR
	R112	NRSA63J-102N	RESISTOR
	R113	NVP1301-222N	V RESISTOR ,V EDGE
	R114	NRSA63J-153N	RESISTOR
	R115	NRSA63J-0R0A	RESISTOR
	R116	NRSA63J-0R0A	RESISTOR
	R117	NRSA63J-394N	RESISTOR
	R118	NRSA63J-105N	RESISTOR
	R120	NRSA63J-222N	RESISTOR
	R121	NRSA63J-332N	RESISTOR
	R122	NRSA63J-822N	RESISTOR
	R123	NRSA63J-222N	RESISTOR
	R124	NRSA63J-102N	RESISTOR
	R125	NVP1301-103N	V RESISTOR ,B-Y GAIN
	R126	NRSA63J-561N	RESISTOR
	R127	NRSA63J-152N	RESISTOR
	R128	NRSA63J-105N	RESISTOR
	R130	NRSA63J-333N	RESISTOR
	R131	NRSA63J-104N	RESISTOR
	R132	NRSA63J-183N	RESISTOR
	R133	NRSA63J-333N	RESISTOR
	R134	NRSA63J-102N	RESISTOR
	R135	NVP1301-103N	V RESISTOR ,YH GAIN
	R136	NRSA63J-102N	RESISTOR
	R137	NRSA63J-102N	RESISTOR
	R138	NRSA63J-102N	RESISTOR
	R139	NRSA63J-102N	RESISTOR
	R140	NRSA63J-102N	RESISTOR
	R141	NRSA63J-333N	RESISTOR
	R142	NRSA63J-273N	RESISTOR
	R143	NRSA63J-333N	RESISTOR
	R144	NRSA63J-333N	RESISTOR
	R145	NRSA63J-102N	RESISTOR
	R146	NRSA63J-103N	RESISTOR
	R147	NRSA63J-103N	RESISTOR
	R148	NRSA63J-123N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R149	NVP1301-223N	V RESISTOR ,COLOR OFFSET
	R151	NRSA63J-333N	RESISTOR
	R152	NRSA63J-154N	RESISTOR
	R154	NVP1301-103N	V RESISTOR ,CD BALANCE
	R155	NRSA63J-102N	RESISTOR
	R156	NRSA63J-393N	RESISTOR
	R157	NRSA63J-183N	RESISTOR
	C2	NCT07CH-100A	CAPACITOR
	C3	PU59867-100W	CHIP TRIM. CAP ,CLOCK OSC
	C7	NCT07CH-220A	CAPACITOR
	C8	NCB31EK-103A	CAPACITOR
	C9	NEH10JM-107NP	E CAPACITOR
	C10	NCB31EK-103A	CAPACITOR
	C11	NEH10JM-226NZ	E CAPACITOR
	C12	NCB31EK-103A	CAPACITOR
	C13	NEH11CM-106NZ	E CAPACITOR
	C14	NCB31EK-103A	CAPACITOR
	C15	NCB31EK-103A	CAPACITOR
	C16	NEH11CM-476NP	E CAPACITOR
	C17	NCB31EK-103A	CAPACITOR
	C18	NCB31EK-103A	CAPACITOR
	C19	NEH10JM-107NP	E CAPACITOR
	C20	NEH11CM-476NP	E CAPACITOR
	C21	NCB31EK-103A	CAPACITOR
	C22	NEH10JM-226NZ	TANTAL CAPACITOR
	C23	NCB31EK-103A	CAPACITOR
	C24	NCB31EK-103A	CAPACITOR
	C25	NEH11EM-475NZ	E CAPACITOR
	C26	NCB31EK-103A	CAPACITOR
	C27	NCB31EK-103A	CAPACITOR
	C28	NCB31EK-103A	CAPACITOR
	C29	NCB31EK-103A	CAPACITOR
	C30	NCB31EK-103A	CAPACITOR
	C31	NCB31EK-103A	CAPACITOR
	C32	NEH11CM-476NP	E CAPACITOR
	C33	NCB31EK-103A	CAPACITOR
	C34	QEE41CM-226	TANTAL CAPACITOR
	C35	NEH10JM-226NZ	E CAPACITOR
	C36	NCB31EK-103A	CAPACITOR
	C37	NCT07CH-221A	CAPACITOR
	C38	QEF80GM-106	TANTAL CAPACITOR
	C39	NCT07CH-330A	CAPACITOR
	C40	NCT07CH-470A	CAPACITOR
	C41	NCT07CH-470A	CAPACITOR
	C42	QCY81HK-473	CAPACITOR
	OR	NCB11HK-473P	CAPACITOR
	C43	NEH11EM-475NZ	E CAPACITOR
	C45	NCB31EK-103A	CAPACITOR
	C46	NCB31EK-103A	CAPACITOR
	C47	NCB31EK-103A	CAPACITOR
	C48	NCB31EK-103A	CAPACITOR
	C49	PU58948-104	CAPACITOR
	C50	NEH10JM-226NZ	E CAPACITOR
	C51	NCB31EK-103A	CAPACITOR
	C52	YU40265-1	E CAPACITOR
	C53	NCB31EK-103A	CAPACITOR
	C54	NEH11CM-106NZ	E CAPACITOR
	C55	NEH10JM-226NZ	E CAPACITOR
	C56	PU59758-105	CAPACITOR
	C57	PU59758-105	CAPACITOR
	C58	PU59758-105	CAPACITOR
	C59	QCFA1EZ-104	CAPACITOR
	C60	PU59758-105	CAPACITOR
	C61	QCFA1EZ-104	CAPACITOR
	C62	PU59758-105	CAPACITOR
	C63	QCFA1EZ-104	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C64	PU59913-473	CAPACITOR
	C65	PU59913-473	CAPACITOR
	C66	QCFA1EZ-104	CAPACITOR
	C67	QCFA1EZ-104	CAPACITOR
	C68	QCFA1EZ-104	CAPACITOR
	C69	QCFA1EZ-104	CAPACITOR
	C70	QCFA1EZ-104	CAPACITOR
	C71	QCFA1EZ-104	CAPACITOR
	C72	NCB31EK-103A	CAPACITOR
	C73	QEK41AM-107	E CAPACITOR
	OR	QECA1AM-107	E CAPACITOR
	C79	PU58948-104	CAPACITOR
	C80	QEF81AM-106	TANTAL CAPACITOR
	C81	QEF81CM-475	TANTAL CAPACITOR
	C82	QEF81VM-334	TANTAL CAPACITOR
	C83	QEF81VM-334	TANTAL CAPACITOR
	C84	NCB31EK-103A	CAPACITOR
	C85	NCB31EK-103A	CAPACITOR
	C86	QEF81AM-475	TANTAL CAPACITOR
	C87	NCB31EK-103A	CAPACITOR
	C88	NCB31EK-103A	CAPACITOR
	C89	QEF81AM-475	TANTAL CAPACITOR
	C90	QEF81AM-475	TANTAL CAPACITOR
	C91	PU59913-473	CAPACITOR
	OR	NCR21CM-473A	CAPACITOR
	C100	NEH10JM-226NZ	E CAPACITOR
	C101	NCB31EK-103A	CAPACITOR
	C102	PU59913-473	CAPACITOR
	C103	NCF31CZ-104A	CAPACITOR
	C104	PU59913-473	CAPACITOR
	C105	NCT07CH-220A	CAPACITOR
	C106	NCB31EK-103A	CAPACITOR
	C107	QEF81AM-106	TANTAL CAPACITOR
	C108	NCB31EK-103A	CAPACITOR
	C109	PU59913-473	CAPACITOR
	C110	PU59913-473	CAPACITOR
	C111	PU59913-473	CAPACITOR
	C112	PU59913-473	CAPACITOR
	C113	PU59913-473	CAPACITOR
	C114	PU59913-473	CAPACITOR
	C115	NCB31EK-103A	CAPACITOR
	C116	PU59758-105	CAPACITOR
	L101	YU40248-220K	COIL
	L102	YU40248-220K	COIL
	L103	YU40248-220K	COIL
	L104	YU40248-220K	COIL
	L105	YU40248-220K	COIL
	L106	YU40248-220K	COIL
	L107	YU40248-220K	COIL
	L108	YU40248-220K	COIL
	L109	YU40248-220K	COIL
	L110	YU40248-220K	COIL
	L111	YU40248-470K	COIL
	L112	YU40248-220K	COIL
	L113	YU40248-470K	COIL
	EQ102	YU40082-2	EQUALIZER
	EQ103	YU40082-2	EQUALIZER
	LPF103	YU40075-2	LOW PASS FILTER
	OR	YU40777	LOW PASS FILTER
	OR	YU40777-R	LOW PASS FILTER
	LPF104	YU40076-3	LOW PASS FILTER
	OR	YU40501	LOW PASS FILTER
	LPF105	YU40077-2	LOW PASS FILTER
	OR	YU40778	LOW PASS FILTER
	OR	YU40778-R	LOW PASS FILTER
	LPF106	YU40076-3	LOW PASS FILTER
	OR	YU40501	LOW PASS FILTER
	DL101	YU40128-2	DELAY LINE
⚠	X101	YU40178B	CRYSTAL RESONATOR
	TRAP101	YU40639	TRAP
	TAB1	PU59915-105	TUBE
	TP101	YU40581	TEST PIN
	TP102	YU40581	TEST PIN
	TP103	YU40581	TEST PIN
	TP104	YU40581	TEST PIN
	TP105	YU40581	TEST PIN
	TP106	YU40581	TEST PIN
	TP107	YU40581	TEST PIN
	CN101	PU58655-3	CAP HOUSING
	CN102	PU58654-10	CAP HOUSING
	CN103	YU40101-10	CAP HOUSING,(BOARD TO BOARD)
	CN104	YU40101-8	CAP HOUSING,(BOARD TO BOARD)
	CN105	YU40103-8	CAP HOUSING,(BOARD TO BOARD)
	CN106	YU40101-10	CAP HOUSING,(BOARD TO BOARD)
	CN107	YU40101-8	CAP HOUSING,(BOARD TO BOARD)
⚠	CP101	ICP-F20	CIRCUIT PROTECTOR
⚠	CP102	ICP-F10	CIRCUIT PROTECTOR

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15. VIDEO-2 BOARD ASSEMBLY <22>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20073A-01-C	VIDEO-2 BOARD ASSY
	IC201	MSM6984MS	IC
	IC202	MSM6984MS	IC
	Q201	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q202	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q203	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q204	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	R201	NRSA63J-0R0A	RESISTOR
	R203	NRSA63J-152N	RESISTOR
	R204	NRSA63J-102N	RESISTOR
	R205	NRSA63J-102N	RESISTOR
	R206	NRSA63J-222N	RESISTOR
	R207	NRSA63J-472N	RESISTOR
	R208	NRSA63J-682N	RESISTOR
	R209	NRSA63J-152N	RESISTOR
	R210	NRSA63J-102N	RESISTOR
	R211	NRSA63J-102N	RESISTOR
	R212	NRSA63J-222N	RESISTOR
	C201	QEF81CM-685	TANTAL CAPACITOR
	C202	QEF81AM-475	TANTAL CAPACITOR
	C203	NCB31EK-103A	CAPACITOR
	C204	NCB31EK-103A	CAPACITOR
	C205	NCB31EK-103A	CAPACITOR
	C206	NCB31EK-103A	CAPACITOR
	C207	QCFA1EZ-104	CAPACITOR
	C208	QEF81AM-475	TANTAL CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C209	NCB31EK-103A	CAPACITOR
	C210	NCB31EK-103A	CAPACITOR
	C211	NCB31EK-103A	CAPACITOR
	C212	NCB31EK-103A	CAPACITOR
	C213	QCFA1EZ-104	CAPACITOR
	C214	QEF81AM-475	TANTAL CAPACITOR
	L201	YU40248-220K	COIL
	L202	YU40248-220K	COIL
	LPF201	YU40254	LOW PASS FILTER
	LPF202	YU40254	LOW PASS FILTER
	CN201	YU40105-8	CAP HOUSING,(BOARD TO BOARD)

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16. ENCODER BORAD ASSEMBLY <23>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20074A-01-C	ENCODER BOARD ASSY
	IC301	AN2276S	IC
	IC302	BA7606F	IC
	IC303	MC8180B	IC
	IC304	TC4S71F	IC
	IC305	NJM4560M	IC
	OR	BA4560F	IC
	IC306	NJM4560M	IC
	OR	BA4560F	IC
	Q301	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	OR	2SC4177(56)	TRANSISTOR
	Q302	2SC3936(C)	TRANSISTOR
	OR	2SC4098(Q)	TRANSISTOR
	OR	2SC4177(6)	TRANSISTOR
	Q303	2SC3936(C)	TRANSISTOR
	OR	2SC4098(Q)	TRANSISTOR
	OR	2SC4177(6)	TRANSISTOR
	Q304	2SA1532(BC)	TRANSISTOR
	OR	2SA1576(QR)	TRANSISTOR
	Q305	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	OR	2SC4177(56)	TRANSISTOR
	Q306	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	OR	2SC4177(56)	TRANSISTOR
	Q307	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	OR	2SC4177(56)	TRANSISTOR
	Q308	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	OR	2SC4177(56)	TRANSISTOR
	Q309	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	OR	2SC4177(56)	TRANSISTOR
	D301	RD7.5M-T1B2	ZENER DIODE
	D302	MA141WA	DIODE
	R301	NRSA63J-103N	RESISTOR
	R302	NRSA63J-102N	RESISTOR
	R303	NRSA63J-103N	RESISTOR
	R304	NRSA63J-152N	RESISTOR
	R305	NRSA63J-222N	RESISTOR
	R306	NRSA63J-471N	RESISTOR
	R307	NRSA63J-123N	RESISTOR
	R308	NRSA63J-392N	RESISTOR
	R309	NRSA63J-123N	RESISTOR
	R310	NRSA63J-103N	RESISTOR
	R311	NRSA63G-224N	RESISTOR
	R312	NRSA63G-223N	RESISTOR
	R313	NRSA63G-823N	RESISTOR
	R314	NRSA63J-122N	RESISTOR
	R315	NRSA63J-682N	RESISTOR
	R316	NRSA63G-223N	RESISTOR
	R317	NRSA63G-683N	RESISTOR
	R318	NRSA63J-123N	RESISTOR
	R319	NRSA63J-103N	RESISTOR
	R320	NRSA63J-103N	RESISTOR
	R321	NRSA63J-562N	RESISTOR
	R322	NRSA63G-223N	RESISTOR
	R323	NRSA63J-123N	RESISTOR
	R324	NRSA63J-562N	RESISTOR
	R325	NRSA63G-224N	RESISTOR
	R326	NRSA63J-222N	RESISTOR
	R327	NVP1301-223N	V RESISTOR ,WHITE CLIP LEVEL
	R328	NRSA63J-222N	RESISTOR
	R329	NRSA63J-102N	RESISTOR
	R330	NVP1301-223N	V RESISTOR, SYNC LEVEL
	R331	NRSA63J-123N	RESISTOR
	R332	NRSA63J-123N	RESISTOR
	R333	NRSA63J-272N	RESISTOR
	R334	NRSA63J-103N	RESISTOR
	R335	NRSA63J-682N	RESISTOR
	R336	NRSA63J-103N	RESISTOR
	R337	NRSA63J-102N	RESISTOR
	R338	NRSA63J-102N	RESISTOR
	R339	NRSA63J-103N	RESISTOR
	R340	NRSA63J-100N	RESISTOR
	R341	NRSA63J-223N	RESISTOR
	R342	NRSA63J-223N	RESISTOR
	R343	NRSA63J-223N	RESISTOR
	R344	NVP1301-223N	V RESISTOR ,R CARR BAL
	R345	NVP1301-223N	V RESISTOR ,B CARR BAL
	R346	NRSA63J-102N	RESISTOR
	R347	NRSA63J-272N	RESISTOR
	R348	NRSA63J-102N	RESISTOR
	R349	NRSA63J-102N	RESISTOR
	R350	NRSA63J-100N	RESISTOR
	R351	NRSA63J-102N	RESISTOR
	R352	NRSA63J-223N	RESISTOR
	R353	NVP1301-103N	V RESISTOR ,BURST LEVEL
	R354	NRSA63J-223N	RESISTOR
	R355	NRSA63J-102N	RESISTOR
	R356	NVP1301-103N	V RESISTOR ,COLOR GAIN
	R357	NRSA63J-102N	RESISTOR
	R358	NRSA63J-272N	RESISTOR
	R359	NRSA63J-222N	RESISTOR
	R360	NRSA63J-682N	RESISTOR
	R361	NRSA63J-681N	RESISTOR
	R362	NRSA63J-682N	RESISTOR
	R363	NRSA63J-681N	RESISTOR
	R364	NVP1301-222N	V RESISTOR ,BURST PHASE
	R365	NRSA63J-562N	RESISTOR
	R370	NRSA63G-823N	RESISTOR
	C301	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	OR	NCR21CK-473A	CAPACITOR
	C302	NCR21CM-473A	CAPACITOR
	OR	NCR21CK-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C303	NCR21CM-473A	CAPACITOR
	OR	NCR21CK-473A	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
		OR PU59913-473	CAPACITOR
	C304	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
		OR NCR21CK-473A	CAPACITOR
	C305	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
		OR NCR21CK-473A	CAPACITOR
	C306	NCR21CM-473A	CAPACITOR
		OR NCR21CK-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C307	NEH11CM-106NZ	E CAPACITOR
	C308	NEH11CM-106NZ	E CAPACITOR
	C309	QEF81EM-155	TANTAL CAPACITOR
	C310	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
		OR NCR21CK-473A	CAPACITOR
	C311	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
		OR NCR21CK-473A	CAPACITOR
	C312	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
		OR NCR21CK-473A	CAPACITOR
	C313	NCR21CM-473A	CAPACITOR
		OR NCR21CK-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C314	NCB31EK-103A	CAPACITOR
	C315	NCB31EK-103A	CAPACITOR
	C316	NCB31EK-103A	CAPACITOR
	C317	NCB31EK-103A	CAPACITOR
	C318	QEF80GM-226	E CAPACITOR
		OR QEF80JM-226	TANTAL CAPACITOR
	C319	NCT07CH-560A	CAPACITOR
	C320	NCT07CH-101A	CAPACITOR
	C321	NCT07CH-101A	CAPACITOR
	C322	NCB31EK-103A	CAPACITOR
	C323	NCB31EK-103A	CAPACITOR
	C324	NCB31EK-103A	CAPACITOR
	C325	NEH10JM-226NZ	E CAPACITOR
	C326	NCB31EK-103A	CAPACITOR
	C327	NCB31EK-103A	CAPACITOR
	C328	QEJ41CM-476	E CAPACITOR
	C329	NCB31EK-103A	CAPACITOR
	C330	NEH10JM-226NZ	E CAPACITOR
	C331	NEH10JM-226NZ	E CAPACITOR
	C332	NCB31EK-103A	CAPACITOR
	C333	NEH10JM-226NZ	E CAPACITOR
	C334	NCB31EK-103A	CAPACITOR
	C335	NCS31HJ-331A	CAPACITOR
	L301	YU40248-220K	COIL
	L302	YU40248-220K	COIL
	EQ301	YU40637-P	EQUALIZER
		OR YU40720-P	EQUALIZER
		OR YU40720	EQUALIZER
	BPF301	YU40640-P	BAND PASS FILTER
		OR YU40756-P	BAND PASS FILTER
		OR YU40756	BAND PASS FILTER
	TP303	YU40648	TEST PIN
	TP304	YU40648	TEST PIN
	CN301	YU40105-10	CAP HOUSING,(BOARD TO BOARD)
	CN302	YU40096-8	CAP HOUSING
	CN303	YU40096-2Y	CAP HOUSING
	CN304	YU40096-4Y	CAP HOUSING
	CN305	YU40105-8	CAP HOUSING,(BOARD TO BOARD)

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17. INDICATOR-1 BOARD ASSEMBLY <24>

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20075B-C	INDICATOR-1 BOARD ASSY
	IC401	VC2073	IC
	IC402	VC2041	IC
	IC404	UPC324G2	IC
	IC405	6VT07	IC
	Q403	2SC3936(BC)	TRANSISTOR
	Q404	2SC3936(BC)	TRANSISTOR
	Q405	2SC3936(BC)	TRANSISTOR
	Q406	2SC3936(BC)	TRANSISTOR
	Q407	2SA1532(BC)	TRANSISTOR
	Q408	2SA1532(BC)	TRANSISTOR
	Q409	2SK198P,Q	FE TRANSISTOR
	Q410	2SC3936(BC)	TRANSISTOR
	Q411	2SA1532(BC)	TRANSISTOR
	Q412	2SA1532(BC)	TRANSISTOR
	Q413	2SA1532(BC)	TRANSISTOR
	D401	RD8.2MB2	ZENER DIODE
	D402	MA704	DIODE
	D403	MA141WK	DIODE
	D404	MA704	DIODE
	D405	MA151WA	DIODE
	R401	NRSA63J-122N	RESISTOR
	R402	NVP1301-472N	V RESISTOR ,IND OSC
	R403	NRSA63J-0R0A	RESISTOR
	R406	NRSA63J-0R0A	RESISTOR
	R408	NRSA63J-0R0A	RESISTOR
	R409	NRSA63J-223N	RESISTOR
	R413	NRSA63J-222N	RESISTOR
	R420	NRSA63J-222N	RESISTOR
	R421	NRSA63J-222N	RESISTOR
	R422	NRSA63J-393N	RESISTOR
	R423	NRSA63J-682N	RESISTOR
	R424	NRSA63J-333N	RESISTOR
	R425	NRSA63J-103N	RESISTOR
	R426	NRSA63J-152N	RESISTOR
	R427	NRSA63J-222N	RESISTOR
	R428	NRSA63J-152N	RESISTOR
	R429	NRSA63J-472N	RESISTOR
	R430	NRSA63J-101N	RESISTOR
	R431	NRSA63J-472N	RESISTOR
	R432	NRSA63J-333N	RESISTOR
	R433	NRSA63J-223N	RESISTOR
	R434	NRSA63J-101N	RESISTOR
	R435	NRSA63J-333N	RESISTOR
	R436	NRSA63J-223N	RESISTOR
	R437	NRSA63J-473N	RESISTOR
	R438	NRSA63J-473N	RESISTOR
	R439	NRSA63J-122N	RESISTOR
	R440	NRSA63J-683N	RESISTOR
	R441	NRSA63J-682N	RESISTOR
	R442	NRSA63J-153N	RESISTOR
	R443	NRSA63J-222N	RESISTOR
	R445	NRSA63J-272N	RESISTOR
	R446	NVP1301-102N	V RESISTOR ,EE LEVEL
	R447	NRSA63J-222N	RESISTOR
	R448	NRSA63J-560N	RESISTOR
	R449	NRSA63J-273N	RESISTOR
	R450	NRSA63J-223N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R451	NRSA63J-473N	RESISTOR
	R452	NRSA63J-123N	RESISTOR
	R453	NRSA63J-123N	RESISTOR
	R454	NRSA63J-103N	RESISTOR
	R455	NRSA63J-103N	RESISTOR
	R457	NRSA63J-0R0A	RESISTOR
	R458	NRSA63J-102N	RESISTOR
	R459	NRSA63J-103N	RESISTOR
	R460	NRSA63J-103N	RESISTOR
	R461	NRSA63J-0R0A	RESISTOR
	R463	NRSA63J-333N	RESISTOR
	R464	NRSA63J-682N	RESISTOR
	R465	NRSA63J-104N	RESISTOR
	R466	NRSA63J-104N	RESISTOR
	R467	NRSA63J-104N	RESISTOR
	R468	NRSA63J-104N	RESISTOR
	R469	NRSA63J-104N	RESISTOR
	R470	NRSA63J-102N	RESISTOR
	R471	NRSA63J-104N	RESISTOR
	R474	NRSA63J-222N	RESISTOR
	R475	NRSA63J-222N	RESISTOR
	R476	NRSA63J-102N	RESISTOR
	R478	NRSA63J-104N	RESISTOR
	R479	NRSA63J-104N	RESISTOR
	R480	NRSA63J-104N	RESISTOR
	C402	NCF31CZ-104A	CAPACITOR
	C403	QEE81CM-226	TANTAL CAPACITOR
	C404	QCFA1EZ-104	CAPACITOR
	C405	NCT07CH-180A	CAPACITOR
	C406	NCT07CH-220A	CAPACITOR
	C407	NCT07CH-220A	CAPACITOR
	C408	-	E CAPACITOR
		QEF80JM-476	T CAPACITOR ,FOR C408-2
	C409	ECEV0JV220R	E CAPACITOR
	C410	QCF81EZ-104	CAPACITOR
	C413	PU59758-105	CAPACITOR
	OR	QCF81CZ-105	CAPACITOR
	C414	ECEV1CV100R	E CAPACITOR
	C415	ECEV0JV220R	E CAPACITOR
	C416	NCT07CH-101A	CAPACITOR
	C417	NCF31CZ-104A	CAPACITOR
	C418	QEF80GM-226	TANTAL CAPACITOR
	OR	QEF80JM-226	TANTAL CAPACITOR
	C419	QEF80JM-106	TANTAL CAPACITOR
	C420	QEF80JM-475	TANTAL CAPACITOR
	C421	QEF81EM-474	TANTAL CAPACITOR
	C422	ECEV1CV100R	E CAPACITOR
	C423	NCB31EK-103A	CAPACITOR
	C425	NCS31HK-221A	CAPACITOR
	C426	NCF31CZ-104A	CAPACITOR
	C427	NCF31CZ-104A	CAPACITOR
	C428	NCF31CZ-104A	CAPACITOR
	C429	NCF31CZ-104A	CAPACITOR
	C430	NCF31CZ-104A	CAPACITOR
	C431	NCF31CZ-104A	CAPACITOR
	C432	NCF31CZ-104A	CAPACITOR
	C433	NCF31CZ-104A	CAPACITOR
	C435	NCB31EK-103A	CAPACITOR
	C437	NCB31EK-103A	CAPACITOR
	L401	YU40248-220K	COIL
	L402	PU58201-120K	COIL
	L405	PU58201-120K	COIL
	L406	PU58201-120K	COIL
⚠	X401	YU40141	CRYSTAL RESONATOR
	SLD1	YQ40538	SHEET

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	CN401	YU40179-110	CAP HOUSING
	CN402	YU40108-10	CAP HOUSING
	CN403	YU40105-10	CAP HOUSING,(BOARD TO BOARD)
	CN404	YU40105-22	CAP HOUSING,(BOARD TO BOARD)
	CN405	YU40096-7	CAP HOUSING
	CN408	YU40096-10	CAP HOUSING
	CN409	YU40096-2R	CAP HOUSING
	CN410	YU40096-2R	CAP HOUSING
	CN411	YU40105-8	CAP HOUSING,(BOARD TO BOARD)
	CN412	YU40096-3Y	CAP HOUSING
	CN413	YU40096-3	CAP HOUSING

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18. FULL AUTO WHITE BOARD ASSEMBLY <25>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20076A-02-C	FAW BOARD ASSY
	IC501	VC2038	IC
	IC502	BA10324F	IC
	OR	UPC324G2	IC
	IC503	BA10324F	IC
	OR	UPC324G2	IC
	PD501	PD170V1	PHOTO DIODE
	R501	NRSA63J-154N	RESISTOR
	R502	NRSA63J-123N	RESISTOR
	R503	NVP1301-223N	V RESISTOR ,AW INDOOR B
	R504	NRSA63J-563N	RESISTOR
	R505	NRSA63J-183N	RESISTOR
	R506	NVP1301-223N	V RESISTOR ,AW INDOOR R
	R507	NRSA63J-563N	RESISTOR
	R508	NRSA63J-223N	RESISTOR
	R509	NRSA63J-683N	RESISTOR
	R511	NRSA63J-473N	RESISTOR
	R512	NRSA63J-473N	RESISTOR
	R513	NRSA63J-823N	RESISTOR
	R514	NRSA63J-0R0A	RESISTOR
	R515	NVP1301-473N	V RESISTOR ,AW IN R LIM
	R516	NRSA63J-473N	RESISTOR
	R518	NRSA63J-0R0A	RESISTOR
	R519	NVP1301-473N	V RESISTOR ,AW OUT R LIM
	R520	NRSA63J-473N	RESISTOR
	R522	QRSA08F-223YN	RESISTOR
	R523	QRSA08F-103YN	RESISTOR
	R524	QRSA08F-513YN	RESISTOR
	R525	NRSA63J-0R0A	RESISTOR
	R526	QRSA08J-0R0Y	RESISTOR
	R527	NVP1301-473N	V RESISTOR ,OUTDOOR B
	R528	QRSA08J-473YN	RESISTOR
	R530	NRSA63J-0R0A	RESISTOR
	R531	NVP1301-473N	V RESISTOR ,AW OUT B LIM
	R532	NRSA63J-473N	RESISTOR
	R534	NRSA63J-0R0A	RESISTOR
	R535	NVP1301-473N	V RESISTOR ,AW IN B LIM
	R536	NRSA63J-473N	RESISTOR
	R538	QRSA08F-223YN	RESISTOR
	R539	QRSA08F-183YN	RESISTOR
	R540	QRSA08F-433YN	RESISTOR
	R541	NRSA63J-0R0A	RESISTOR
	R542	QRSA08F-223YN	RESISTOR
	R544	QRSA08F-473YN	RESISTOR
	R546	QRSA08J-0R0Y	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R547	NVP1301-473N	V RESISTOR ,OUTDOOR R
	R548	QRSA08J-473YN	RESISTOR
	R550	QRSA08F-183YN	RESISTOR
	R552	QRSA08F-563YN	RESISTOR
	R554	NRSA63J-102N	RESISTOR
	R555	NRSA63J-182N	RESISTOR
	R556	NRSA63J-102N	RESISTOR
	R557	NRSA63J-122N	RESISTOR
	R558	NRSA63J-104N	RESISTOR
	R559	NVP1301-224N	V RESISTOR ,AW OUTDOOR B
	R560	NRSA63J-102N	RESISTOR
	R561	NRSA63J-153N	RESISTOR
	R562	NRSA63J-153N	RESISTOR
	R563	NVP1301-224N	V RESISTOR ,AW OUTDOOR R
	R564	NRSA63J-102N	RESISTOR
	R565	NRSA63J-104N	RESISTOR
	R566	NRSA63J-103N	RESISTOR
	R567	NRSA63J-103N	RESISTOR
	R572	NRSA63J-472N	RESISTOR
	R573	NRSA63J-0R0A	RESISTOR
	R574	NRSA63J-222N	RESISTOR
	R575	NRSA63J-0R0A	RESISTOR
	R576	NRSA63J-0R0A	RESISTOR
	R581	NRSA63J-101N	RESISTOR
	R582	NRSA63J-101N	RESISTOR
	C502	NCB31EK-103A	CAPACITOR
	C503	NEH11CM-106NZ	E CAPACITOR
	C504	NCB31HK-272A	CAPACITOR
	C505	NCB31HK-272A	CAPACITOR
	C506	NCB31HK-272A	CAPACITOR
	C507	NEH11CM-106NZ	E CAPACITOR
	C508	NCB31EK-103A	CAPACITOR
	C509	NEH10JM-226NZ	E CAPACITOR
	C510	NEH11EM-475NZ	E CAPACITOR
	C511	NEH11EM-475NZ	E CAPACITOR
	C516	NCB31EK-103A	CAPACITOR
	L501	PU58201-220K	COIL
	OR	YU40248-220K	COIL
	SW501	PU57008	TACT SWITCH
	SW502	PU57008	TACT SWITCH
	FIL1	YQ40394	WHITE FILTER
	SLD1	YQ40395	SHIELD CASE
	SLD2	YQ40396	SHIELD PLATE
	CN501	YU40101-22	CAP HOUSING,(BOARD TO BOARD)
	CN502	YU40101-12	CAP HOUSING,(BOARD TO BOARD)
	CN503	YU40095-4	CAP HOUSING

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19. MIC AMP BOARD ASSEMBLY <26>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB30030A-01-C	MIC AMP BOARD ASSY
	IC701	M5282FP	IC
	R701	NRSA63J-102N	RESISTOR
	R702	NRSA63J-562N	RESISTOR
	R703	NRSA63J-102N	RESISTOR
	R704	NRSA63J-473N	RESISTOR
	R705	NRSA63J-221N	RESISTOR
	R706	NRSA63J-223N	RESISTOR
	R708	NRSA63J-682N	RESISTOR
	R709	NRSA63J-103N	RESISTOR
	R711	NRSA63J-222N	RESISTOR
	R712	NRSA63J-0R0A	RESISTOR
	C701	ECEV1EV4R7R	E CAPACITOR
	C702	ECEV1CV470P	E CAPACITOR
	C703	NEH10GM-476NZ	E CAPACITOR
	C704	NCT07CH-101A	CAPACITOR
	C705	ECEV1EV4R7R	E CAPACITOR
	C706	NCB31HK-152A	CAPACITOR
	C707	ECEV1EV4R7R	E CAPACITOR
	C708	ECEV1CV470P	E CAPACITOR

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20. INDICATOR-2 BOARD ASSEMBLY <27>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20077B-C	INDICATOR-2 BOARD ASSY
	IC801	VC2081	IC
	IC802	M5M5256FP-10L	IC
	IC803	M54641FP	IC
	IC804	MN12821(QR)	IC
	IC851	UPD4013BG	IC
	OR	BU4013BF	IC
	IC852	TC4S69F	IC
	IC853	TC4S71F	IC
	IC854	TC4S71F	IC
	IC855	UPD4013BG	IC
	IC856	TC7S32F	IC
	Q801	2SA1532(BC)	TRANSISTOR
	D801	MA714	DIODE
	D802	1SS133	DIODE
	R801	NVP1301-222N	V. RESISTOR ,TITLE WIDTH
	R802	NRSA63J-102N	RESISTOR
	R803	ERT-D2FGL601S	THERMISTOR
	R804	NRSA63J-151N	RESISTOR
	R805	NRSA63J-104N	RESISTOR
	R806	NRSA63J-104N	RESISTOR
	R811	NRSA63J-101N	RESISTOR
	R812	NRSA63J-101N	RESISTOR
	R813	NRSA63J-682N	RESISTOR
	R814	NRSA63J-472N	RESISTOR
	R815	NRSA63J-153N	RESISTOR
	R816	NRSA63J-103N	RESISTOR
	R820	NRSA63J-472N	RESISTOR
	R821	NRSA63J-225N	RESISTOR
	R829	QRD161J-471	RESISTOR
	R852	QRD161J-104	RESISTOR
	C802	QEF81CM-226	TANTAL CAPACITOR
	C803	NCT07CH-181A	CAPACITOR
	C804	ECEV1CV100R	E CAPACITOR
	C805	ECEV0JV220R	E CAPACITOR
	C806	NCR21CM-473A	CAPACITOR
	C812	NCB31HK-391A	CAPACITOR
	L801	PU58201-120K	COIL

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	L802	PU58201-120K	COIL
	SPC1	YQM30019-5	PAD
	CN801	YU40105-12	CAP HOUSING
	CN804	YU40096-4	CAP HOUSING
	CN805	YU40096-2	CAP HOUSING

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21. SWITCH BOARD ASSEMBLY <28>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20070A-01-C	SWITCH BOARD ASSY
	R901	QRSA08J-102YN	RESISTOR
	R902	QRSA08J-102YN	RESISTOR
	R903	QRSA08J-102YN	RESISTOR
	R904	QRSA08J-102YN	RESISTOR
	R905	QRSA08J-102YN	RESISTOR
	SW901	PU57008	TACT SWITCH
	SW902	PU57008	TACT SWITCH
	SW903	PU57008	TACT SWITCH
	SW904	PU57008	TACT SWITCH
	SW905	PU57008	TACT SWITCH
	CN901	YU40095-6	CAP HOUSING

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22. DRUM BOARD <31>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWB	YDM3001	UPPER DRUM BOARD

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23. LED BOARD <33>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWB	YB40001	LED BOARD
	D1	SIM-20ST	LE DIODE